AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED IN 1831.

PUBLISHED WEEKLY BY J. H. SCHULTZ & CO., AT NO. 9 SPRUCE ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. X., NO. 37] SATURDAY, SEPTEMBER 16, 1854. [WHOLE NO. 961, VOL. XXVII.

PRINCIPAL CONTENTS.

American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., NO. 9 SPRUCE ST.

Saturday, September 16, 1854.

Sinking Funds for Railroad Loans.

The dilemma in which the Erie Railroad Company recently found itself in view of the speedy maturity of its *Income* bonds, (amounting only to about $2,600,000), at once shows the faultiness of our system of raising money for railroads, and earnestly calls for radical reform. It may be said in fact that we have, thus far, proceeded in the construction of our works without system, or thought for the future. A company commences operations with such means as can be raised on the line of its road, whether they bear any proportion to its ultimate cost or not. These exhausted, *borrowing* is next resorted to upon terms most likely to raise the money, irrespective of the company's abilities to repay it at the time stipulated. So long as companies were able to discharge their *old*, by the creation of *new* liabilities, the inherent vice in the course they were pursuing was neither seen nor felt. But money can no longer be raised in the old way. Railroads are not the *fashion*, as formerly, and the company whose liabilities are maturing, suddenly finds itself cut off from popular support, and without the means of meeting the demands upon it, although apparently entitled, by its *income* to whatever aid it needs.

The present condition of Erie is a good illustration in point. Were we to judge from the price at which the stock and securities of the Company at one time are selling, we should have supposed the Company to have been on the very verge of bankruptcy. Yet it had a much stronger claim to credit, than when the *Income* bonds were issued. They were purchased, say at 85, on the faith of certain *assumed* results of the construction of the road. These results have been more than realized. The road is more productive than its most sanguine friends ever claimed, yet the holders of these very bonds are selling them at a discount of 30 per cent., though they have less than 6 months to run. The *convertible* bonds of 1871 are selling at a trifle over 60 cents on the dollar; bonds which only recently commanded *par*.

The *market* price of any security does not depend so much upon the amount of property apparently available for its redemption, as upon the probability of its *prompt* payment, for the reasons that business men cannot have the payment of what is due them depend upon any *contingency*, and because the failure to pay at maturity, a debt well secured, implies a lack of business capacity, and a degree of improvidence on the part of the debtor, as to render it probable that he will *not* pay, whatever may be the extent of his means.

The general success of our railroads, as far as their earnings are concerned, is fully proved. Nothing is more certain than that they will earn a fair income on their cost; consequently that no investment can be better secured than *mortgage bonds*, equalling in amount *one-half* such cost. It is equally true, that a *six* per cent. loan, with ample provision for its payment, is worth *par*, and in the long run, a *premium*. United States', and the best State Stocks, are at a price that does not yield much over 4½ per cent. A seven per cent. railroad bond, perfectly secured, by the admission of the purchaser, will not frequently in the outset, sell for more than 80 cents on the dollar, and will sometimes remain for a long time at that figure, though the value of the property on which it is based may have been doubled by the subsequent additions to the *construction* account.

The cause of the anomaly is in the fact that no provision is made for the *payment* of loans made for railroads, when contracted. "*How are all these loans to be paid?*" is the question universally asked, and the absence of any satisfactory answer weighs like an incubus upon their value. Money may be easy when they are offered, and if such be the case when they fall due, there *may* be no difficulty in their *renewal*. But suppose the opposite should be the fact, that they should happen to mature during a *monetary* panic such as we are just passing through; at a time when it may be impossible to borrow. What would then be the result? Default, perhaps, and with it disgrace, and great loss in the (market) value of the security. Such is a *possible* contingency, and such *possibility* exerts a constant influence in depressing the value of our railroad securities, and keeps them far below that of other investments less favorably circumstanced in every other respect.

The first step toward securing an adequate price for railroad bonds is to recognize the fact that they are eventually to *fall due*, and to make *some* provision for their payment; both of which seem mainly to have been ignored. All have heard the story of the miser "who did not want his money if the debtor *had* it, but who wanted it instantly, if he did *not*." It was only the "grand confidence" that was wanted. So with the creditors of railroad companies. There is hardly one that will not look with regret to the maturity of his loans, *provided* he is satisfied they are well *secured*. Could he feel that they were so, when offered for sale, he would give their *value*, as measured by the values of other loans of the safety of which there is no doubt. He does not deny a *seven* per cent. to be worth a premium, but he asks, "if I get *seven* per cent., shall I ever receive back my loan?" and unless this question be answered to his satisfaction, he demands a premium for the risk he runs.

The losses sustained by our railroads in such *premiums* is enormous. What is worse, it is a loss, every penny of which might be saved, simply by making some provisions for the *payment* of the loans when negociated. Our companies ex-

pect to make such provisions, some day. Why not when they are contracted, for the purpose of receiving the benefit of such provision.

For a number of years past Europeans have invested largely in our railroads. That they will continue to, so long as our people can offer them a safe security there is not a doubt. They have the sense to see that property must be safer, in the long run, in a country where the citizens of every State, from the highest to the lowest, feel that they would be the *losers* by any change in the social fabric. There can be no conspiracy against the existing *status*, so long as no one is *dissatisfied*; nor no necessity for *force* where every member of society acts as a conservator of the existing order, from inclination. The foreigner fully appreciates the resources of our country, the adaptation of railroads to its wants, and the increasing value of these works with our progress in population and wealth. He admits that they are *productive*, and may be made *profitable*. He purchases, of course, at the best rate he can, and as before stated he demands in each case a premium in proportion to the *apparent* risk he runs. If he gets a *seven* per cent. security for 80, which turns out to be perfectly safe, he likes his bargain none the worse, but he would just as readily have paid par for a *six* per cent. against which no quibble, or objection should be urged. An unquestioned six per cent. is worth a premium in any market and will readily command it. If we pay more it is through improvidence or mismanagement, or because we offer securities that have some taint in them, or undertake works, far beyond the means of the country to construct or sustain.

An ordinary loan brought out in this market, is a *seven* per cent., on *ten* years. Such loans not unfrequently sell at 80 cents on the dollar. Supposing the amount to be $1,000,000, the company receives $800,000, for which it repays in ten years the *principal*, and $700,000 in *interest*, equal to 1,700,000 in the whole, or $900,000 more than the amount received, which is equal to *eleven* per ct. per annum. Certainly, 85 cents on the dollar is an average price at which such loans sell. This is equal to an interest of *ten* per cent. Now suppose that the loan bore *six* per cent., with a sinking fund sufficient to extinguish the principal in ten years. For this purpose a sinking fund of *seven* per cent. semi-annually will be required. *Thirteen* p.ct. annually would pay the interest and the principal at maturity, only *three* per cent. more than which is now usually paid on what are considered *well* negotiated loans! We have no doubt that in ordinary times a six per cent. with a sinking fund provided in the manner stated would sell at par from first hands. For the want of such provisions, therefore, our companies lose on a $1,000,000 loan for ten years *four-sevenths* of $1,000,000, or $570,000, equal to nearly 6 per cent. annually on the whole loan, or a passable dividend on an equal amount of stock, and which declared by English companies, would carry their stocks to a handsome premium.

If the loan have a longer time to run the percentage set apart for dividends may be proportionally less. A loan of *three* millions on 25 years will by liquidated by a sinking fund of 1½ per cent., or $45,000, half-yearly, as will be seen by the following statement, the amount for each year being placed against the appropriate figures.

Years.		Years.	
1	$45,787 50	13	$922,189 68
2	94,789 12	14	1,032,530 45
3	147,202 23	15	1,150,595 08
4	203,298 89	16	1,276,924 24
5	263,311 96	17	1,412,096 44
6	327,531 30	18	1,556,730 69
7	396,245 99	19	1,711,489 34
8	469,779 71	20	1,877,081 09
9	548,442 16	21	2,054,264 27
10	632,620 61	22	2,243,850 27
11	722,691 55	23	2,446,707 29
12	819,067 46	24	2,663,764 30
25 years			2,896,015 30

If an amount equal to the discount at what the Erie Convertibles sold, which was about $1,050,000 on $7,000,000, had been set apart as a sinking fund, it would have produced at their maturity, $4,000,000. Had this amount been so set apart, and had it been shown what it would have produced, there is no doubt these loans would have commanded a *premium* instead of selling at a large *loss*. The company loses in this instance the sum of *four million of dollars* just for the want of a little precaution, or thought for the future. It is easy to see mistakes after we are past their remedy. We ask whether the Erie or any other company can afford to make such sacrifices to a *mistaken* policy.

The loss consequent upon our present improvident mode of doing things is enormous. If the roads of other countries could earn as much *net*, as we sacrifice yearly, the result would be considered satisfactory. If the amount of loans negotiated in the manner we have stated equal $100,000,000, the loss is nearly $6,000,000 annually.—If $200,000,000, which is much below the amount we are losing nearly $12,000,000; a sum certainly worth looking after, and upon the saving of which the success of our roads may in the end depend.

But the advantage of a sinking fund does not end in the amount *saved* in the manner stated.—The very act of creating one gives a *moral* nature to a company, which a corporation is not generally supposed to possess. It is the fullest acknowledgement of the obligations *incurred* It would probably effect more than any other measure toward raising the standard of management of our companies. Where a sinking fund is created, the presumption will be that the project is a good one, and will be regarded by its managers as something worth looking after. We measure the value of anything by its *cost*. A company cannot continue to pay for a long series of years a large sum to relieve their property from incumbrance, without believing it to be very valuable, and without becoming possessed with a conviction that it is deserving the most careful management. No body of men will pay $50,000 a year out of their own pockets, and neglect the management of that, on account of which it was paid. The annual payment of so much money will beget habits of the most scrupulous economy and watchfulness, which will probably result in saving the amount paid by any company to a sinking fund. It is our firm conviction, that from the higher tone of management which would unquestionably be secured, such funds would not in the majority of cases cost our companies a penny. Where, *no* measure of the kind is adopted, there is danger that a sense of the obligation created by a loan will gradually wear out. What has cost nothing is never valued. Where directors of a road have never contributed a dollar of their own means toward it, nor have ever taken a step by which the rights of those who *have* furnished the money are fully recognized, there is great probability they will become listless and indifferent to their charge, that the road will be neglected, the means of the company will be squandered, and that the sentiment of all concerned become so thoroughly demoralized that any attempt to recover the ground lost, or too meet any crisis that may happen, will be in vain. The only way to avoid such a conclusion is to awaken a *personal* interest on the part of directors of roads, or to subject them to such a policy as cannot fail, from the necessities it imposes, to work out a salutary result. The *difference* in the two cases is that which consists in doing business upon a *sound* principle, or upon none at all. In one case, the man is saved simply by his adherence to such principle; in the other, he is ruined for the want of it; his *intentions* in both cases remaining substantially the same.

We entertain no doubt as to the integrity of the great majority of our railroad companies, nor question the disposition of the mass of the stockholders in our roads to do exact justice to their creditors. But it must be remembered that their obligations were created under a conviction that the enterprises in which they had embarked would prove profitable, while it is inevitable that some should be disappointed. Roads that were believed would be productive, have failed to be so. In some cases, the creditors will resort to their rights under the mortgage, and the fact that the stockholders are threatened with the loss of a large amount of property, will create a strong temptation to seek to avoid in some way or other the threatened catastrophe. All such occasions for collisions between stock and Bond holders will be rendered impossible by a contract in the outset, by which a certain amount of the earnings, and sufficient in the end to redeem the road from all incumbrance, are to go direct to trustees, without ever becoming the property of the company.—Certainly, when it is so easy to remove all occasion of difference between the creditors and debtors in our railroads, it is most important to do so.

Were it common practice for railroad companies to establish *sinking* funds, the effect would be to advance the price of all securities, not only from their greater safety, but from the greater abundance of money which would necessarily result. One great cause of the frequent scarcity of money in this country is, in the fact that everything is *invested* in *works*, as fast as realized. Were there every year a few millions invested at *interest* in securities, or on *bond* and *mortgage*, the amount would in a comparatively short time bear a respectable proportion to the whole indebtedness of our railroad companies. A certain portion of the capital of the country would be in *money*, applicable to all the ordinary operations of business. The fact of large sums being constantly liberated from the custody in which they were held, and thrown upon the market, would not only increase the relative value of other kinds of property, but would render the supply of money uniform, and prevent those excesses of ease or stringency, between which we are constantly oscillating. Had the railroad companies throughout the country $50,000,000 invested in sinking funds, it would

keep the rates for money very far below the prevailing figures, while it would carry up in a much greater ratio the price of all kinds of securities. The seller and purchaser in such case would then change places, and the former would dictate terms instead of the purchaser, as at the present time. Were the loans of our railroad companies to be paid off as they become due, the rates of interest in this country would rule nearly as low as in Europe.

We commend the above suggestions to the consideration of railroad companies. If they have, in their haste to complete their works, made sacrifices to meet what appeared to be necessary exigencies, an opportunity is still left open to them to retrieve the errors that have been committed. Fortunately, most of the loans of our railroad companies are on long time, and may be provided for by sinking funds, which will only require a small amount to be carried to them annually.—The policy recommended is one in which our companies have a vastly greater interest than *capitalists*. The latter will make more money by having matters remain as they *are*. It is the railway public which is being sacrificed, and which should be aroused to a proper sense of the extent of its losses from an unwise and improvident policy.

Improvement of the Locomotive.

BY ZERAH COLBURN.

The Connection of the Cylinders.

Regarding the "outside connection" as an essential feature of the best system of locomotive power, I shall devote the present article to a discussion of its relative merits as compared with the "inside connection."

The two systems of attaching the working connecting rod of the engine,—in one case to the crank pin on the outside of the driving wheel, and in the other to a bell-crank, formed in the driving axle,—termed respectively the outside and inside connection, have each peculiar merits and demerits. I have so often advocated the first named of these arrangements, in detached editorials in this *Journal*, that it appears consistent to briefly review the grounds for my preference in this series of articles.

Probably the fairest mode of treating the subject is to first say all that can be said in *favor* of the inside connection, and all that can be said *against* the outside connection. If, on subsequent examination, the "outside" can claim a balance in its favor, my preference is confirmed.

The advantages claimed for the inside connection are, greater steadiness of motion than can be had by any other plan in use, and the protection of the cylinders from the cooling effects of the atmosphere. The last claim is however a nullity with American-built engines, as their steam cylinders are never protected on their under sides. The only advantage for which the inside system can contend is therefore that of greater relative steadiness of motion.

The objection urged against the outside connection is that, compared with respect to the particulars stated as in favor of the opposite plan, it is relatively inferior. The relative disadvantage sustained by the outside connection, by reason of the exposure of the cylinders, will be readily admitted to be but little, so long as the cylinders of inside-connected engines are nearly as much exposed.

The discussion of the two systems is therefore at once reduced upon a single point, viz. that the inside connection runs more steadily than the outside connection. It is believed that this embraces all the advantages claimed for inside connections; all the superior economy claimed in repairs and in the action upon the track, being contingent upon this distinction.

The outside connection being thus subject to the imputation of *unsteadiness*, the causes which produce this condition must be analysed.

There is a palpable cause of unsteadiness in all reciprocating motions, and the effect is proportional to the weight and velocity of the disturbing parts. In respect to *weight*, the outside connection has the least, and has a corresponding advantage; besides having the disturbing action confined to the plane of motion of the wheel, a condition the best possible for perfect counterbalancing.

The disturbance, whatever it is, due to applying the power of the two cylinders at distances of from six to eight feet apart are next to be considered. The disturbing action is not exhibited at the driving wheels, and for two reasons: first, the adhesion of the drivers is almost always in excess of the steam pressure exerted at the rim of the wheel; hence the drivers could not exhibit any impulse imparted to them, tending to disturb their ordinary motion, as the resistence *exceeds* the disturbance; and, second, the action and reaction of the steam in the cylinder are equal, and hence a strain upon the driving axle in one direction is balanced by a corresponding strain in the other direction.

The disturbing action, such as it is, is therefore exhibited at the front end of the engine. During the times when the pistons are both moving in the same direction no disturbance occurs, as the pressures are equal on *each side* of the engine. While the pistons are moving in opposite directions a tendency to sinuous motion is developed. This tendency is opposed by the inertia of several tons of the weight of the engine, and by the friction of the bearings of the engine upon its truck and of the latter upon the rails. While the *tendency* to sinuous motion is admitted, it is sufficient to say that in *practice*, it is not manifested to an extent sufficient to condemn the arrangement to which it is due. The worst cause of unsteadiness has been, until lately, the unbalanced momentum of the reciprocating machinery.

This consideration affects to a great degree the comparison of the two arrangements. The fact that the *tendency*, attributed to the outside connection, is *restrained*, without injury, by the inertia and rigidity of the heavy portions of the engine, so as not to be sensibly *manifested*, is one which rests upon no hypothesis but is confirmed in practice.

It is seen that the stability of an outside connected engine must depend upon the inertia of a considerable portion of the weight of the machine. It is then of consequence that the fastenings of the cylinders be such as to bring the strains exerted within them directly upon the stiffest part of the front end of the engine. The Paterson plan of bolting the cylinders by wide flanges directly to a stiff smoke box is therefore the best, as making the most direct and most secure medium for transmitting and absorbing the strains. The strength and permanence of this connection in the engines of the New Jersey Locomotive and Machine Company contrasts strongly with the New England style of bolting the cylinders only to a light frame, but imperfectly braced to the boiler.

Another circumstance which promotes the steadiness of the outside connection is the modern plan of lengthening the entire wheel base of the engine as well as the spread of the truck wheels. By adding flanges also to the forward drivers the engine runs steadier, besides having more adhesion, and wearing the tires more equally. These modifications would not promote the steadiness of the inside connection to an equal extent, as they would not affect the same *causes* of unsteadiness.

It is true also that the inclination of the cylinders of the old style of outside connection contributed to make them unsteady. At one time it seemed a settled feature of outside connections that they should have inclined cylinders, but in the majority of cases it is now found that the cylinders can be placed level, or so little out of level as not to disturb the steadiness of the engine.

The practical result of the matter is that outside connected engines, with properly counterbalanced drivers, level cylinders, strong cylinder fastening, well spread trucks and with flanges on all the wheels run as steadily as any inside connections. Without some of these conditions, the result is less satisfactory. But the general result stated, where the conditions given are all observed is not one of opinion merely, but of *fact*.

So far, the outside connection has been heard in its *defence*. Now let us reverse the line of argument and state the *demerits* of the inside and the *peculiar merits* of the outside connection.

First: the *crank* of the inside connection weighs twice as much and costs $300 more than the straight driving axle of the outside connection. It has also much greater friction, and is far more liable to breakage. The cost of renewing broken cranks has alone changed the preference of the managers of the Western road of Massachusetts, as well as of other roads, from the inside to the outside connection.

Second: the weight of crank, and necessarily greater relative weight of the connecting rods, requires additional weight for counterbalancing. The least balancing an engine requires, the steadier it will run; as balancing, upon the ordinary plan, does not remove the common cause of unsteadiness without creating a new cause, which although not felt on the "footboard", is injurious to the tires.

Third: the inside connection requires a relatively greater amount of room, horizontally, laterally and vertically. It limits the length of the furnace, it elevates the boiler from 9 to 12 inches, and it crowds the machinery, laterally, to a very inconvenient degree. In the last named particular especially, a narrow gauge engine intended to have 18 inch cylinders, if arranged upon any ordinary plan, could not have its working machinery of proper strength.

The room required vertically for the clearance of the crank, places the boiler from 9 to 12 inches higher, not only giving greater tendency to *roll*, and making longer braces and steam pipes neces-

sary, but it cuts off just so much from the length otherwise attainable with a given height of bridges and station doors, for the smoke pipe. Many of the New England roads have chimnies too short for good draught, simply because that, with their inside connected engine, they can get no more room under their bridges.

The limits imposed by the inside connection to the size and arrangement of heavy engines prevents the realization of the benefits which could often be attained by the use of heavy engines. There are many minor advantages which are contingent upon these considerations, and which are in favor of the outside connection. While, leaving out the consideration of the relative steadiness, first discussed, the inside arrangement has no merits not possessed in an equal degree by the outside.

Journal of Railroad Law.

CAUTION CONSIDERED RELATIVELY.

With regard to accidents occuring upon Railroads a far greater degree of caution is demanded from those who are responsibly employed on such roads than from travellers or mere laborers. The strictest care and the most untiring vigilance are required from the former. The latter are not bound to be "wise above that which is written" in the code of common sense and in the placards of Railroad Companies.

Hence the Supreme Court of our State has sustained a party's claim for damages from a Railroad injury, although when injured, he was, with the Conductors' assent, in the baggage car, and would probably have escaped injury had he been in his appropriate place: a passengers car.

In thr case of *Tong vs. Lancaster* and other lately tried at *Nisi Prius* before Justice Crowder, in England, the plaintiff was one of the subordinate employees of the Lancashire & Y. R. W. Co., the defendents were managers of a mining Company having a privilege on the Railroad, the plaintiff was employed in uncoupling a van at a station distant 10 miles from Manchester, when defendants coal train came up without giving the usual sign, and so injured plaintiff that an amputation of his hand became necessary. It was urged for defendants on the trial there were not enough pointsmen on the road to indicate to the defendents the necessity of slackening their speed. But to this it was replied that inasmuch as no signals of safety were displayed at the station, the defendents were not authorized to approach towards it. It was further objected by defendants that the plaintiff got off the van on the wrong side, and uncoupled it with his foot instead of his hand, and thereby contributed to producing the injury complained of.—But the Judge was of opinion that all things considered, the plaintiff had exercised a reasonable degree of caution and was entitled to recover.—Verdict was rendered in his favor for £100.

DOES A RIGHT OF WAY AUTHORIZE THE DEPOSIT OF GOODS AND THE CONSTRUCTION OF A PRIVATE RAILROAD?

Such were the questions lately discussed in the case of *Appleton vs. Fullerton* decided in the Supreme Judicial Court of Massachusetts. The plaintiffs alleged that defendents have entered upon the premises of the former, broken up the soil used the same as a place of deposit for merchandize and constructed a Railway thereon.—The place on which the alleged trespass occurred was a passageway, *cul de sac*, in the rear of certain ware houses of which defendent has a lease for ten years, and as such, in common with other abuttors entitled to right of way over the same by virtue of the following clause in their lease.

"It is mutually agreed between the same parties that the said passageway shall continue open for the free use of the abuttors on said passageway, and to be used and enjoyed by them in as full a manner as they now are, and heretofore have been used and enjoyed." The plaintiff was the owner in fee of the soil of the passageway. The defendants had used the same as a place of deposit for merchandize, have laid a flooring of planks across the passageway, the warehouses occupied by them being at the rear of the passage, from the back door of one warehouse to that of the other, and laid iron tracks or rail thereon, to facilitate the transfer of the heavy articles in which they dealt, being iron merchants, from one warehouse to the other. These planks and rails were at first laid above the ground, but the passageway was subsequently repaired and raised by plaintiffs so that they were when the action was brought a little and but a little above the surface. In laying them it was not necessary to subvert the soil, but they were laid on the surface and remained there permanently. There was no evidence that such use had been made of the place either for transit or deposit, until so made by the defend ants, nor did it appear that the plaintiffs had actually been damaged thereby. The action was brought to recover damages for a violation of the plaintiffs right in laying down said planks and rails and using the passage way as a place of deposit for their goods.

The Supreme Court held that the above cited words of the lease did not prevent the defendants from having a full right of way for all purposes, *with all improvements*, not only in the manner before used, but in any other manner of using the same right; that the words quoted, if they had any operation, were intended to enlarge not to restrict the right reserved by the general terms, for example, if it had been a mere surface of the earth it might be improved by macadamizing, paving or planking, being limited to the use of the same right in a manner more beneficial to those having the common right; and that this was the proper construction of the reservation.

It was properly a question for the jury to determine, whether from the evidence the laying down by defendant a Railway for his own benefit and at his own cost, although not detrimental to others, was a use of the said, for a distinct purpose *beyond* that of the right of way. If so, it would be adverse to plaintiff's rights. Keeping the railway there 20 years would have given defendants a right to continue it, hence plaintiff should, if likely to be prejudiced, be allowed to vindicate his right by action.

But if laying down the railway was no new use of the said, but only an improvement for the purpose of convenience not injurious to any one, it was within the right of way reserved to the abuttors and perfectly consistent with plaintiffs rights.

And it was further held that a right of way to a warehouse would authorize the tenant to place goods brought to a warehouse on the ground and keep them a reasonable time for the purpose of putting them in the store; and to do likewise in respect to goods to be carried from the warehouse.

Mississippi and Tennessee Railroad.

This important road, uniting Memphis with Grenada, Miss., and thence by direct extensions to New Orleans and Mobile, is about to be let to contract. The located line between Memphis and Grenada is 97 miles in length, or but 3⅓ miles greater than a right line. The axis of this road, if prolonged, wou'd bisect a straight railroad line from Mobile to New Orleans, and it may therefore be regarded as the trunk line for trade and travel going south of Memphis. To the extent therefore to which direct and favorably graded railroads can compete with rivers, this road will compete, for its business, with the Mississippi.

The direct connections of this road now constructing are the Mississippi Central from Grenada to Canton, Miss., and thence by the Great Northern road to New Orleans; and also from Grenada to the Mobile and Ohio road, and thence to Mobile.

So much for the terminal relations of the road. Locally, eight counties, De Sota, Panola, Tallahatchie, La Fayette Yallobusha, Choctaw, Carroll and Chickasaw, will be directly tributary to the road in Mississippi. These counties, twenty-five years ago in the possession of the Choctaw and Chickasaw Indians, have now an aggregate population of more than 120,000 inhabitants, producing 100,000 bales of cotton, and five million bushels of corn annually. The road runs for but 9¾ miles in Tennessee, from the State line to Memphis It crosses the Tallahatchie river below the head of steamboat navigation, and reaches Grenada, which is at the head of the steamboat navigation of the Yazoo, and is consequently the focal point for the products of a considerable territory.

The line of the road is favorable as to curves, having not less than 1,910 feet radius, and having an average of but 14 degrees of curvature per mile. The grades are not severe, the maximum being of 47½ feet per mile, while two-thirds of the located line are literally *level*.

The engineer, Minor Merriwether, Esq., in an able report just received, estimates the entire cost of the road, equipped for a permanent business at $2,000,000, or $20,460 per mile. By commencing however with a partial equipment, and by the use of wooden structures instead of brick work, at several stations, the cost need not exceed $1,700,000.

The resources of the company up to the date of the report are as follows.

Individual subscription	$534,700
Memphis City subscription	250,000
State bonds of Tennessee $10,000 per miles for 9¾ miles	97,500
Total present means	$882,200

9 per cent. only of the stock had been called in at the date of the report,—June 20, 1854.

The amount now available it is expected will grade and iron nearly 60 miles of road, doing all the grading and finishing very nearly all of the rails. The Memphis city subscription and State Bonds are pledged to be expended for iron. In the mean time additional subscriptions are relied on. A few words will state the basis of the company's faith in this prospect. Large majorities in Panola and De Soto counties voted $400,000 of county subscriptions, payable by tax; and notwithstanding the validity of such a tax was sustained by the courts, the company had the confidence in the popularity of their enterprise to re-

linquish this subscription, only as having caused opposition to the payment of the tax by those who were otherwise friendly to the road. Since returning this subscription the company have received nearly the whole amount from individuals composing the counties upon which it was assessed.

The contracts for the grading of 17 miles have been closed, and the contractors are making preparations for commencing the work, which is to be completed by the 1st of July, 1855; and a verbal contract has been entered into for 18 miles more, which will be closed as soon as the notes of location are prepared. Contracts have been closed for the trestle work on the first 37 miles out of Memphis, and for the masonry of the first 5 miles. All of these contracts, with the exception of bridging, have been taken by *planters*.

It is probable that this company may find it expedient to issue an amount of bonds, equal to one-third of the cost of their road; in which event we should anticipate a ready sale, when the money market shall become easier. The substantial resources of the enterprise, and the economy which promises to characterize its operations, will, if not abused or relaxed, form an ample security for any indebtedness the company will be likely to incur.

The offices of the Mississippi and Tennessee railroad are at Memphis, Tenn.

Easton, Pa.

The Philadelphia *News* gives an interesting description of Easton, and of the important railroad improvements centering there. This town, now containing nearly 10,000 inhabitants, sustaining extensive business relations with New York, is not known in proportion to its importance, by many of those interested in a very extensive system of roads in which Easton will be a first-class point. The fact is that Easton has laid too long off of the main routes of travel. There is a probability that it may yet become a large wayside city on the direct route from New York to Cincinnati. The *News* says of Easton that it is in the immediate vicinity of the Delaware Water Gap in one direction, and the beautiful town of Bethlehem in another, and is surrounded by a country not only rich and rare in its deposits of mineral wealth, but abounding in scenery of the most beautiful and picturesque description. As a business place, it is not only of great importance, but seems recently to have received an impetus which is likely to secure for it a destiny equal to any of the inland localities of the State. Located within sixty-five miles of our own city, it is, however, most surprising that its business relations and trade have been mostly with our rival city of New York. At Easton the Lehigh Company's canal has its termini, where the trade from it enters upon the Delaware Division of the Pennsylvania Canal. Connected with this work, is the feeder of the Delaware and Raritan Canal, which is entered by an outlet lock at Wellsville, from whence a portion of the trade of the Delaware division is diverted through the Delaware and Raritan Canal to New York. At Easton also commences the Morris Canal, running through the State of New Jersey, and having its terminus at Newark, from whence its trade is transported through Newark Bay to New York also.

In addition to these works leading to New York, there is the New Jersey Central Railroad, now in operation, and extending to Elizabethtown, a distance of 75 miles, where it connects with the New Jersey Railroad to Jersey City. There is also, now in operation, the Belvidere Delaware Road, extending from Easton to Trenton, fifty miles, where passengers and freight are taken either to New York or Philadelphia. The Lehigh Valley Railroad, now in the course of construction, is rapidly progressing to completion, and is being built with a view to connect with the New Jersey Central and the Belvidere Delaware roads, both of which will be made in the immediate vicinity of the town. For the purpose of making these connections a bridge of immense height is now being constructed across the Delaware at Easton, on which the track of both roads will be laid—that of the New Jersey Central crossing at an elevation of some thirty feet above the Belvidere Road, and both occupying the same structure. This bridge presents in its present state, the evidences of immense labor and skill, and is being constructed for the Lehigh Valley Company by Messrs. W. A. Atwood & Co., whose reputation as bridge builders and constructors of heavy masonry, is being widely spread throughout the country.

At Easton, there will also be, in a comparatively short time, connections by railroad with Williamsport and Catawissa on the one side, and Scranton and the New York and Erie Road on the other, which, added to the collateral connections consequent on those already named cannot fail to render the place one of the most important in the State.

Railways in Great Britain.

The London *Times* presents the following abstract of the report upon the Railways of Great Britain for 1853, presented to the Board of trade.

The length of railway opened previously to December, 1843, was 2,036 miles. The length opened in the year 1844 was 204 miles; in 1845, 296 miles; in 1846, 606 miles; in 1847, 803 miles: in 1848, 1,182 miles; in 1849, 869 miles: in 1850, 625 miles; in 1851, 269 miles; in 1852, 446 miles; and in 1853, 350 miles, making the total length then opened, 7,686 miles; of which 5,848 miles are in England, 995 in Scotland, and 843 miles in Ireland. The length of the narrow gauge railway, including the Irish gauge of 5½ feet, is 6,965 miles of the broad gauge 626 miles, and of the mixed gauge 95 miles. The number of railway companies having single lines of railway at the end of 1853, was 97: the length of single narrow gauge lines, including the Irish gauge, 1,543 miles: of broad gauge 112 miles, and of mixed gauge 53 miles—1,708 miles; of which 1,135 miles of single line are in England, 132 miles in Scotland, and 441 miles in Ireland. The length of single line open at the end of 1852 was 1,485 miles, and of 1851, 1,307 miles. A single line of railway cannot be worked with safety except under special regulations, so framed as to prevent the possibility of engines or trains, moving in opposite directions from meeting on the single line. Such regulations are, however, inconsistent with a large amount of traffic.

The amount of capital invested in railways at the end of 1852 was £264,165,680, of which £161,400,256 consisted of ordinary capital, £38,700,755 of preference capital, and £64,064,668 of loans.—The amount of capital raised for railway purposes in 1849 was £29,574,720; in 1850, £10,522,967; in 1851, £7,970,151, and in 1852, £16,398,993; thus increasing the amount invested in railways at the end of 1849 from £229,747,779 to £264,165,680 at the end of 1852. The amount of money which was raised by railway companies during 1853 has not yet been returned to Parliament, but it may be assumed not to have been less than that raised during 1852, and it is therefore probable that the whole sum raised by railway companies to the end of 1853 is not less than £281,000,000, of which about £42,000,000 may be assumed to have been preferential capital, and nearly £70,000,000 would appear to have been borrowed on the security of the undertakings.

The number of miles of railway in course of construction on the 30th of June, 1853, was 682 miles, and the number of men employed on them was 37,764. The number of miles open for traffic at that date was 7,512, and the number of men employed 80,409. The number of men employed on railways open for traffic was 9.5 per mile in 1852, and 10.7 per mile in 1853.

The total number of passengers conveyed on railways in the United Kingdom in the year 1853 amounted to 102,286,660; the number in 1852 had been 89,135,729. The total receipts from all sources of traffic amounted in 1853 to £18,035,879, and in 1852 to £15,710,554.

In England the mean length of line open during the year has been increased from 4,355 miles in 1849 to 5,730 miles in 1853; and the total number of passengers conveyed has increased from 49,879,362 in 1849 to 84,212,961 in 1853, being an increase of from 11,450 per mile in 1849 to 14,695 per mile in 1853. The numbers conveyed of each class bear very near the same relative proportion to each other in each year. In 1853 number of first-class was 12·76 per cent., the number of second-class was 37.8 per cent., and the number of third-class 49·42 per cent. of the whole number carried. The receipts from passengers have increased from £5,446,518 in 1849 to 7,326,106 in 1853, being an increase of from £1,255 per mile to £1,279 per mile (the amount received during 1851 having amounted to £1,330 per mile). The receipts per mile from each class in 1849 were, first-class £606, second-class £518, third-class, £331, in 1853 the receipts per mile had diminished on the first and second class to £403 and £474 respectively, and had increased from £4,750,504 in 1849, to £8,112,477 in 1853 being an increase of from £1,090 per mile in 1849, to £1,415 per mile, in 1853; and while the receipts from passengers, in 1840, were lager than the receipts from goods in the proportion of 53·42 to 46·58; in 1853 the contrary was the case—viz', the per centhge of the passenger traffic was 47·45, and of the goods traffic. 52·55. In Scotland the progress of traffic has been similar. The mean length of railway in Scotland open during the year has increased from 795 miles, open in 1849, to 987 miles open in 1853. The number of passengers conveyed in 1849 amounted to 7,902,228, and in 1853 to 10,999,224 which represents 9,993 per mile in 1849, against 11,246 per mile in 1853. The receipts of passengers increased from £540,770 to £697,712; or from £680 per mile in 1849, to £718 per mile in 1853. The receipts from first-class passengers were £181 per mile, for second-class £179 per mile, and from third class passengers, £345 per mile, in 1853. The amount received from goods in 1849 was £650,640, and in 1853 it was £1,068,016, representing £818 per mile, in 1849, against £1,075 per mile in 1853. The relative proportions of the two dercriptions of traffic were, in 1849, passenger traffic 45·38, and 54·62; and in 1853 the receipts from goods traffic amounted to 60·48 per cent. of the whole traffic. In Ireland, the mean length of railway open in the year 1849 was 428 miles, and in the year 1853 it was 771 miles. The total number of passengers conveyed in 1849 amounted to 6,059,974 or 14,142 per mile; and in 1853 it amounted 7,074,475, or 9,175 per mile. The receipts from passengers have increased from £290,604, in 1819 to £537,250 in 1853; the receipts per mile having been £688 in 1849 and £696 in 1853. The receipts from goods amounted in 1849, to £127,462, and in 1853 to £294,310, ar £297 per mile in 1849. and £387 per mile in 1853. The relative proportion of receipts from the two classes of traffic was in 1849 69-51 per cent from passengers, and 30·49 per cent. from goods, and in 1853 it was 64·62 from passengers, and 35·58 from goods. Since the year 1849, while the number of miles in the united kingdom had increased 34 per cent, the number of passengers had increased 69 per cent. the receipts from passengers 36 per cent,, from goods 71 per cent., and the total receipts had increased 53 per cent. or from £5,115 per mile in 1849, to £2,407 per mile in 1853. The proportionate increase in the number of the lower class of passengers convcyed by railway is greater that that of other classes, and the proportion which the receipts from that class bear to the receipts from other classes is greater for 1853 that it was for 1849. The receipts from goods are also largely increasing, and they bear every year an increasing proportion to passenger traffic,

Large Load for a Freight Engine.

During the last year Mess. Rogers, Ketchum and Grosvenor built two freight engines of an original design for the Buffalo and State Line Railroad. These engines had all their weight on their drivers, six in number; had level cylinders; outside connection; a moderate length of wheel base, and it was intended on both of them to use the cast iron chilled slip tire. For one of the engines the chilled tires could not be had in season, and wrought tires were used. All the features of this design were calculated, when combined, to produce an engine of great efficiency. The engines were completed and put to running, and during the period of their operation have earned the reputation of being the best and most effective freight engines, every way, upon the entire line of roads around the lake shore. The diameter of cylinder of these engines is 16 inches, length of stroke 22 inches, and diameter of drivers 56 inches for the "Vulcan," and 54 inches for the "Vesuvius."

In an Erie and in a Buffalo paper we have noticed accounts of recent performances of these engines which are worth publishing as showing the efficiency of the model which we have so often advocated as proper for all freight roads.

The Erie *Constitution* of August 23d—says, "The Engine "Vulcan" took out of this city east on Thursday last a train of 46 cars loaded with freight and live stock, being an aggregate of about 450 tons, the largest and heaviest train ever sent from this point. She went through in time. The "Vulcan" is from the works of Messrs. Rogers Ketchum and Grosvenor, Paterson, N. J. of about medium size, and is in her line a perfect model of strength. Her mate, the "Vesuvius" is from the same works and of the same capacity." Another very fair load—The Buffalo *Commercial* of Tuesday last says "the State Line Railroad brought over their track from Erie last evening, 715 head of cattle. Of these 221 were left at Dunkirk and 498 come through to Buffalo the train consisted of 44 cars and was drawn by the "Vesuvius."

This we think is doing pretty well, the "Vulcan" has chilled tires and the "Vesuvius" wrought iron tires.

These trains were taken over grades of 40 to 45 feet per mile, a circumstance which largely increased the effective duty of the engines.

We are much pleased with the performances of these engines, as affording the best illustrations of the value of the identical arrangements which we have so often urged for the proper adaptation of locomotive power. It is sufficient to say that the old N. England plan, having *inside* connection, 16 by 20 inch cylinder, 4½ feet wheels and a *truck*, would be from 15 to 25 eight wheel cars upon a 45 feet grade.

The efficiency of the chilled tires is seen in the fact that great as was the load of the "Vesuvius" with wrought tires, the "Vulcan" with chilled tires drew two more cars, or 46 cars in all, the largest load ever drawn by one engine over the road.—Both engines were of identical construction with the exception of the tires, and the difference of 2 inches in the diameter of the drivers: The "Vulcan" which took the largest train, having the *largest* drivers, a fact which still further shows the efficiency of the chilled tires; inasmuch as the tractive power of engines is *inversely* as the size of the drivers.

We are quite convinced that the style of freight engine so successfully brought into use by the State Line Railroad will become generally popular. The particular engines referred to, and which have done Mess. Rogers, Ketchum and Grosvenor so much credit, are described as being very steady on the track, and as being the easiest on *curves* of any engines on the road. The engines are also of extremely simple construction and are consequently very economical for repairs.

Simplicity, durability, steadiness and efficiency are the most desirable qualities for all engines resulting as is always the case in superior *economy*.

The Blue Ridge Railroad of South Carolina.

Mr. Winsmith of the South Carolina Legislature in a speech, delivered before that body, in December 1853, opposed the subscription, on the part of the State, of $750,000 to the Blue Ridge Railroad. We have looked upon this road, all along, as being for a South Carolina scheme, too near the border of the State, and perhaps with the same view Mr. Winsmith thus opposed the subscription asked.—But we have no doubt of its ultimate construction. And, still further, we are convinced that the direct route through Ashville and the French Broad river valley will *also* be built,—the route advocated by Mr. Winsmith. The Greenville and Columbia road is prepared to meet both roads over the mountains. The North Carolina Central, East Tennessee and Georgia, Spartanburg and Union roads, and roads running from the North Carolina Central to Norfolk,—the city of Columbia too, are all interested in the construction of the Ashville road. We do not believe the construction of the road through Rabun Gap will *prevent* that of the direct route for Charleston, via Ashville. Were but one road to be built, we think South Carolinans generally would choose the latter. It would be only the moneyed interest held by the State in the stock of the South Carolina road that could divert a preference from this to the Rabun Gap route. Anderson, on the shortest line, would be no nearer Charleston than Savannah; while the "cut off" proposed to be built by the Greenville and Columbia road from that point to the South Carolina road at Aiken, would leave nearly the whole State to the North. It would throw Columbia, and the extended system of railroads centering there, *off the route*.

In Mr. Winsmith's speech he says:

By an examination of the surveys of the old Louisville, Cincinnati and Charleston Railroad Company, we will find that a railroad route has already been surveyed, having all the desirable considerations which I have already adverted to. And although combinations of untoward circumstances have heretofore prevented the accomplishment of this great design, yet, sir, from each terminus, that line is rapidly filling up. From Charleston, the road is already built to Columbia, and is in progress of completion to Spartanburg, C. H.—From Cincinnati it is stretching out South very fast, and will soon be completed as far as Knoxville, Tennessee, leaving only the short gap from Knoxville to Spartanburg, C. H., to be filled up.—The survey made by order of the old Louisville, Cincinnati and Charleston Railroad Company is equal in point of accuracy to any, I have no doubt, that has been made by any company in this State. There were, at that time, no rival routes or rival companies. The engineers were directed to ascertain the most eligible location for a railroad to connect the city of Charleston with Cincinnati and the great West. They examined carefully the whole mountain range, and decided unanimously that the Butt mountain Gap was the most suitable point to cross the Blue Ridge, and that the route leading to and from that gap was preferable to any other—that no tunnel was required, and that you could cross the mountain with an ascending and descending grade not exceeding abont forty feet to the mile. The distance of railroad to connect Charleston with the West by this route is about fifty miles less than by the Rabun Gap route. It passes through a central portion of the State by Columbia to Charleston. It will not cost more than half as much to complete the connection by this route as by the Rabun Gap.

Institutions for Engineering Instruction.

To master a *profession* one must acquire a knowledge of *principles*. This truth is so evident in its application to all mental training that it does not require to be enforced beyond assertion. *Routine* is the education of a *trade*, and one in which principles are so seldom recognized as often to be entirely overlooked. In Engineering, therefore, which has so well recognized claims as a noble profession, the study of principles is a leading requisite for success.

Our practical engineers are mostly office graduates, but whose opportunities for instruction have been shaped more by *themselves* than by the settled routine of their apprenticeship. Imitation, with most minds, is so much stronger the Perception, that the separation of *principles* from *practice* becomes a slow process. It requires a fortunate and rare quality of mind to become eminent as an engineer, even if under constant practical training.

We are pleased therefore to see increasing facilities for the *study* of engineering. Systematic instruction is better than "*picked up*" attainments.

Nearly all the European governments have established national polytechnic schools. In our own country, however, it is a credit rather than a reproach, that we are independent of government patronage; (at least in matters naturally unassociated with government.) Competition in *teaching* and in *learning* makes better teachers and learners than a monopoly of instruction, and an "over issue" of diplomas.

The principles of Engineering are now taught in a number of well regulated institutions in different parts of the country.

The Lawrence Scientific School, under the management of the Trustees of Harvard University, of Cambridge, Mass., has for several years furnished to young men full instruction in Civil and Mining Engineering, Mathematics, Chemistry, Geology and kindred sciences. This institution comprises the best resources of oral and written instruction, having nine distinct professorships filled by gentlemen of the highest talent, and having valuable libraries and apparatus in all the departments of the academic course.

The Polytechnic College of the State of Pennsylvania, chartered in 1853, also offers a course of technical instruction, similar to that pursued in the oldest institutions of Europe. This institution is established in Philadelphia, and is under the general management of a board of Trustees, whose head is Matthew Newkirk, Esq.

The Rensselaer Polytechnic Institute, of Troy N. Y. under the directory of B. Franklin Greene,

Esq., offers full instruction in the elements and practice of Architecture, and in Railway, Hydraulic, Topographical and Mining Engineering.

The Engineers and Mechanics College of Cleveland, Ohio, also, under the management of E. Nugent, Esq., has been established during the present year to afford to young men theoretical and practical instruction in Civil Engineering and Architecture, as well as in Mathematics, Drawing, and Penmanship.

All of these institutions are entitled to popular support, as they all possess abundant resources of instruction for young men seeking distinction in he useful and honorable professions to which they are devoted.

Central Ohio Railroad.

This important road is rapidly approaching completion. It is expected that a locomotive will be run through, from Columbus to Wheeling, by the first of October. The entire length of this road is 136 miles; the Western division from Columbus to Zanesville being 59 miles, and the Eastern division, from Zanesville to Wheeling, 77 miles. 85 miles of the road, east of Columbus, are now in operation.

The commercial and social results which will attend the opening of this road can only be estimated by reference to the success of the leading existing routes between the Atlantic and the Mississippi Valley. It will place the cities of the Chesapeake Bay in connection with nearly every occupied portion of the west. Baltimore, especially, will at once reach the prize for which she has devoted years of exertion. South Eastern Ohio, also, will experience the same influences which railroads have exerted on other portions of that State.

The distance from Baltimore to St. Louis will be but 936 miles, via. the Indiana Central and Terre Haute roads; and from Baltimore to Cincinnati, 619 miles. The construction of about 100 miles of road, between the Ohio and Indiana road at Lima, and the Central road at Newark, would complete almost an air line to Chicago; and of uniform gauge between Wheeling and Chicago.—In fact, the position of the Central Ohio road to the other roads of that state is such as to place Baltimore, of all the Eastern cities, in the most direct connection with the *whole* system of railroads intersecting the Mississippi Valley.

The entire line of road will be completed and brought into use at a cost of about $34,000 per mile, making it, when its permanent construction and the capacity of its establishment are considered, a comparatively cheap road.

The Baltimore and Ohio road, looking to the importance of the completion and operation of this road during this fall, have loaned it upon the obligation of the Central Ohio Company, and for a short time, $400,000 of bonds of the North Western road of Virginia. These bonds, held by the Baltimore and Ohio Company, were not immediately needed, and were loaned to the Central Company to enable them to purchase an equipment, corresponding with the immense through business which their road is confidently expected to do. Three fifths of these bonds are guaranteed by the city of Baltimore and two fifths by the Baltimore and Ohio railroad company. On the *pledge* of these bonds the Central Company expect to raise $300,000 in cash, sufficient with their present means, to complete and equip their road.

Messrs. Robert Garrett & Sons, are reported to have disposed of above $1,000,000 of Central Ohio Bonds in Baltimore, where they are now principally held for permanent investment. These bonds were sold at from 85 to 87½.

A large portion of the motive power of this road, (the engines designed to burn bituminous coal) will be supplied by Mess. Smith and Perkins, of Alexandria, Virginia.

Union of the Old Colony and Fall River Railroad of Massachusetts.

The following is the award of the referees, upon which the consolidation of these two companies has been effected:

The value of all the property of the Old Colony Railroad Company, including the franchise, rights of action, and assets, of every description, subject so all its debts and liabilities, absolute and contingent, we award and determine to be the sum of $1,650,000, which sum is to be deemed and taken as the contributing interest of said Old Colony Railroad Company to the capital stock of the "Old Colony and Fall River Railroad Company" on the 30th day of June, 1854.

The value of all the property of the Fall River Railrord Company, including its franchise, rights of action, and assets of every description, subject to all its debts and liabilities, absolute and contingent, we award and determine to be the sum of $1,050,000, which sum is to be deemed and taken as the contributing interest of said Fall River Railroad Company to the capital stock of the Old Colony and Fall River Railroad Company on the 30th of June, 1854.

We furlher award and determine that the whole capital stock of the Old Colony and Fall River Railroad Company aforesaid shall be the sum of $2,700,000 represented by 27,000 shares of the par value of $100 each; the proportion of said capital stock to be shared by the stockholders of the Old Colony Railroad Company shall be 16,500 shares thereof; and the proportion of said capital stock to be shared by the stockholders of the Fall River Railroad Company shall be 10,500 shares thereof.

And in consideration thereof, the entire property of the said Old Colony Railroad Company and of the said Fall River Railroad Company, real and personal, including their respective franchises rights of action, and assets of every description, shall be deemed and taken to have vested in, and become the property of the "Old Colony and Fall River Railroad Company, on the 30th day of June last past, subject to all their respective debts and liabilities, absolute and contingent, which are to be assumed and borne by the said Old Colony and Fall River Railroad Company.

In regard to the amount of capital stock of the consolidated company, the following report of a committee, appointed to consider and rpeort thereon, was adopted.

That the amount of the capital stock of the Old Colony Railroad Corporation represented by certificates which have been issued, was $1,965,100: and the amount of capital stock of the Fall River Railroad Company, represented by certificates which have been issued, was $1,050,000—making an aggregate of $3,015,100; and the committee are of opinion that the capital stock of the new corporation formed by the union of both of said former corporations ought to be equal to the aggregate capital stock of both of said corporations, to be divided according to the proportions stated in the award of the referees, viz: in the proportion of 16,500 to the stockholders of the Old Colony Railroad Company and 10,500 to the stockholders of the Fall River Railroad Company.

The committee recommend the adoption of the following resolution:—

Resolved, That the amount of the capital stock of the Old Colony and Fall River Railroad Company shall be the sum of three millions, fifteen thousand and one hundred dollars ($3,015,100).

The directors of the new company are Francis B. Crowninshield, Wm. J. Walker, Caleb C. Gilbert and James H. Beal, of Boston; Richard Borden, Fall River; Alexander Holmes, Kingston, and PeterH. Pierce of Middleboro.

Leonard Scott & Company's Reprint of the Foreign Reviews.

To place before such a public as the United States, the tendency of which, from the distracting influences to which it is constantly subjected, is toward *superficiality*, the results of the intellectual vigor and research of *England*, is effecting a good second to none other possible to be conferred upon our people. In this light we regard the early republication of the English *Reviews*,—the *Edinburgh*; the *London Quarterly*; the *Westminster*; the *North British*, with *Blackwood's Magazine*, by Leonard Scott & Co., 79 Fulton street, New York, as an invaluable source to the literature and thought of this country. These works constitute a most complete record of the progress of society in science and art, in ideas, in the theory of government, and in political and religious toleration. They cannot be read without imparting the culture of which they are the expression. They are admirably calculated to abate our great national infirmity, *self-conceit*, by showing that in a great many particulars which constitute true national greatness, we are far behind other people; and that even where we think we must excel, in notions of the competent functions of government, our greatest lights, in correctness of views, and in insight into the nature of man, are far behind what we find in the old country.

We commend the above publications to our readers. The whole *five* may be had for the year, for $10; or any one of them for $3. *With* them all, a man has sufficient literary matter for his reading, and more thought than he can well digest, between number and number.

Iowa.

A road is proposed to be built from Keokuk, northerly through Mount Pleasant, Fredonia, and Muscatine, to Lyons; thus supplying the place of river communication for nearly 200 miles, besides penetrating the interior of the country sufficiently to attract a large part of the interior trade.

This road on the west bank of the Mississippi, together with the Warsaw and Rockford road pursuing the same general course for the same distance on the east bank, will be of great value to St. Louis. Iowa is growing at the most rapid rate and possesses the most extended and substantial elements of future greatness. And by the above occupation of the west bank of the Mississippi, St. Louis will be in a position to intercept a large portion of the trade of Iowa, brought from the interior by the Burlington and Missouri and the Mississippi and Missouri roads.

Harlem Railroad.

Mr. Nicholas Dean has been elected President of the Harlem Railroad Company.

Cleveland and Toledo Railroad.

Mr. Henry Martin, formerly President of the Buffalo and Rochester Railroad, has been elected President of the Cleveland and Toledo Railroad Company, in place of S. F. Vinton, who has resigned. Mr. Martin entered on his duties on the

1st of September. The receipts of this road are rapidly increasing, and promise to be 50 per cent. above those of last year.

American Railroad Journal.

Saturday, September 16, 1854.

New Inventions.

Among the patents granted in June was one to Henry R. Campbell of Lebanon N. H., for "an improvement in railroad tracks and wheels." Instead of a single line of rail on each side of track, two lines are proposed, say 2½ inches apart. For this double system of rails, wheels of perhaps 9 inches width are proposed, with a flange in the center of their width made to run *between* the double line of rails.

We have no doubt that the expense of an extra line of rails, ($6000 to $7000 per mile) would prevent the adoption of any such plan. Besides there would be a difficulty in keeping the space open and clear between the rails.

New Spark Arrester. G. B. Simonds, of New Haven, Conn., and Abel Breaer, of Saugatuck, Conn., have patented a spark arrestcr in which the draft opening through the top of the outer casing is of the same size and shape as the outside of the deflecting cone immediately below. Around the draft opening, in the top of the outer case, a flange projects downwards to within a few inches of the cone. The cone, having straight sides, projects the sparks outward, and *upward* instead of downward, the latter being the direction generally given by the deflecting cone in ordinary sparkers. The steam and smoke are expected to escape between the upper edge of the cone and the lower edge of the flange, above described: the sparks being carried past this opening and deflected downwards against the top of the outer casing.—The outer casing, draft opening top of inside pipe and cone are made oval in their horizontal plan, so as to present the least *frontage*, and to diminish the trailing of smoke. The inside pipe has "spreaders" so as to throw the exhaust upon all sides of the cone.

Share and Money Market.

The share market has assumed a new aspect during the past week and has shown an advance as rapid as has been its previous decline. The improvement in some of the leading stocks will be seen by the following table.

	7. Sept.	8. Sept.	9. Sept.	11. Sept.	12. Sept.	13. Sept.
Erie	36	39	40	41½	45	48½
N. York Central	89	89	88½	88	89	92
Michigan Southern	90	..	90	..	..	..
Michig'n Central	85	..	86½	87	86	87
Harlem	31½	..	31½	..	31	32½
Reading	68	69	69	68¾	68½	70
Cleveland & Toledo	..	..	69¾	70	..	72
HudsonRiv'r.	40	45	47	45	44	47½

The great advance has been in *Erie*, arising partly from increased confidence as to its value, and partly from a speculative movement. It is stated that a contest for the direction has helped to the recent rise, which is equal to about 20 per

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net Earnings for last official yr.	Dividend for do.	Price of Shares.
Atlantic and St. Lawrence	Maine.	150	1,538,100	2,973,700	5,973,700	254,743	113,520	none	86
Androscoggin and Kennebec	"	55	824,863	1,043,540	2,036,140	177,003	80,053	none	32
Kennebec and Portland	"	72	1,073,673	1,439,694	2,520,981	168,114	100,552	none	42
Port., Saco and Portsmouth	"	51	1,355,500	123,884	1,459,384	208,669	....	6	94½
York and Cumberland	"	20	285,747	341,100	713,605	23,946	11,256	none	24
Boston, Concord and Montreal	N. H.	93	1,649,278	622,200	2,540,217	150,538	79,659	none	17
Concord	"	35	1,485,000	none.	1,485,000	305,805	141,836	8	105½
Cheshire	"	54	2,078,625	720,900	3,002,094	287,768	55,266	5	35
Northern	"	82	3,016,634	....	....	328,782	163,075	5	42
Manchester and Lawrence	"	24	717,543	....	....	....	....	6	70
Nashua and Lowell	"	15	600,000	none.	651,214	132,545	51,513	8	104½
Portsmouth and Concord	"	47	....	....	1,400,000	....	....	none	....
Sullivan	"	26	....	....	673,500	....	....	none	10
Connecticut and Passumpsic	Vt.	61	1,097,600	550,000	1,745,516	....	....	none	20
Rutland	"	120	2,486,000	2,429,100	5,577,467	495,397	266,539	none	9
Vermont Central	"	117	8,500,000	3,500,000	12,000,000	....	....	....	4½
Vermont and Canada	"	47	1,500,000	....	1,500,000	Leased to the Vt. C		ent.	78
Western Vermont	"	51	392,000	700,000	....	Recently	opened.	none	....
Vermont Valley	"	24	....	....	....	....	....	none	....
Boston and Lowell	Mass.	28	1,830,000	206,190	2,044,536	434,599	114,098	6	81½
Boston and Maine	"	83	4,076,974	150,000	4,111,345	803,024	418,358	8	100½
Boston and Providence	"	55	3,160,000	402,326	3,579,041	509,326	226,639	6½	77
Boston and Worcester	"	69	4,500,000	590,541	4,850,754	887,219	413,289	7	95½
Cape Cod branch	"	29	421,950	180,000	633,906	68,942	26,412	5	40
Connecticut River	"	52	1,591,110	286,363	1,802,244	258,220	102,098	4	52
Eastern	"	58	2,850,000	1,192,975	3,120,391	620,810	310,875	6	61½
Fall River	"	42	1,050,000	6,208	1,050,000	294,183	126,589	8	93
Fitchburg	"	67	3,540,000	191,500	3,716,870	626,659	214,633	6	87½
New Bedford and Taunton	"	20	500,000	none.	529,964	188,442	46,839	7	117
Boston and New York Central	"	74	1,159,228	953,370	2,221,068	90,315	35,214	none	50
Old Colony	"	45	1,964,070	295,038	2,293,534	374,897	122,866	none	99
Taunton Branch	"	11	250,000	none.	307,136	159,738	21,490	.8	....
Vermont and Massachusetts	"	77	2,233,939	1,139,615	3,207,818	244,323	13,144	none	11½
Worcester and Nashua	"	46	1,140,000	194,445	1,342,593	182,398	81,807	5	52½
Western	"	155	5,150,000	5,319,520	9,953,258	1,525,224	746,736	7	93½
Stonington	R. I.	50	....	467,700	....	240,572	110,892	....	65
Providence and Worcester	"	40	1,457,500	300,000	1,791,999	291,417	120,892	6	80
Canal	Conn.	45	922,500	500,000	1,400,000	....	....	4	65
Hartford and New Haven	"	72	2,350,000	800,000	3,150,000	639,529	294,269	10	119
Housatonic	"	110	....	....	2,500,000	329,041	168,902	none	....
Hartford, Prov. and Fishkill	"	50	....	....	In progres	69,629	....	none	....
New London, Wil. and Palmer	"	66	558,861	800,000	1,511,111	114,410	....	....	....
New York and New Haven	"	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	....
Naugatuck	"	62	926,000	440,000	....	....	....	8	....
New London and New Haven	"	55	750,500	650,000	1,380,610	Recently	opened.	none	40
Norwich and Worcester	"	54	2,121,110	701,600	2,596,488	267,561	116,965	4	45
Buffalo and New York City	N. Y.	91	900,000	1,550,000	2,550,500	Recently	opened.	none	....
Buffalo, Corning and N. York	"	132	....	....	In progres	....	....	none	....
Buffalo and State Line	"	69	879,636	872,000	1,921,270	Recently	opened.	....	130
Canandaigua and Niagara F	"	50	....	....	In progres	....	....	....	....
Canandaigua and Elmira	"	47	425,509	582,400	987,627	76,760	39,360	none	....
Cayuga and Susquehanna	"	35	687,000	400,000	1,070,786	74,241	23,496	none	....
Erie, (New York and Erie)	"	464	10,000,000	24,003,865	33,070,863	4,318,962	1,800,181	7	36
Hudson River	"	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	42
Harlem	"	130	4,725,250	977,463	6,102,935	681,445	324,494	4	31
Long Island	"	95	1,875,148	516,246	2,446,391	205,068	44,070	none	22½
New York Central	"	504	23,085,600	10,773,823	33,859,423	....	....	....	89½
Ogdensburgh (Northern)	"	118	1,579,969	2,969,760	5,133,834	480,137	195,847	....	11
Oswego and Syracuse	"	35	350,000	206,000	633,598	92,353	46,072	....	....
Plattsburg and Montreal	"	23	174,042	131,000	349,775	Recently	opened.	none	....
Rensselaer and Saratoga	"	25	610,000	25,000	774,495	213,078	96,737	....	....
Rutland and Washington	"	60	850,000	400,000	1,250,000	Recently	opened.	....	....
Saratoga and Washington	"	41	899,800	940,000	1,832,945	173,545	135,017	none	30
Troy and Rutland	"	32	237,690	100,000	329,577	Recently	opened.	....	33
Troy and Boston	"	39	430,936	700,000	1,043,357	Recently	opened.	none	....
Watertown and Rome	"	96	1,011,940	650,000	1,693,711	225,152	116,706	8	92
Camden and Amboy	N. J.	65	1,500,000	....	4,327,498	1,388,385	478,413	10	148
Morris and Essex	"	45	1,022,420	128,000	1,220,325	149,941	79,252	7	....
New Jersey	"	31	2,197,840	476,000	3,245,720	603,942	316,259	10	131
New Jersey Central	"	63	1,679,935	1,500,000	3,195,222	365,833	179,210	7	95
Cumberland Valley	Penn.	56	1,184,500	13,000	1,265,143	118,617	76,890	5	....
Erie and North East	"	20	600,000	....	750,000	Recently	opened.	....	125
Harrisburgh and Lancaster	"	36	830,100	713,227	1,702,528	265,827	106,320	8	55
Philadelphia and Reading	"	95	6,656,332	10,427,800	17,141,987	2,480,626	1,251,987	7	68
Philad., Wilmington and Balt.	"	98	5,000,000	2,399,166	8,067,285	868,038	541,769	5	69

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central	Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	85
Philadelphia and Trenton	"	30	....	....	....	....	....	....	....
Pennsylvania Coal Co	"	47	....	....	....	....	....	....	97
Baltimore and Ohio	Md.	381	13,118,902	5,677,103	22,254,338	2,033,420	798,193	7	49¼
Washington branch	"	38	1,650,000	....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna	"	57	....	....	....	413,673	152,536	....	..
Alexandria and Orange	Va.	65	....	....	In prog.	....	....	....	....
Manassas Gap	"	27	....	....	In prog.	....	....	....	....
Petersburgh	"	64	769,000	173,867	1,163,928	227,593	72,370	7	77
Richmond and Danville	"	73	1,372,324	200,000	In prog.	....	....	....	70
Richmond and Petersburgh	"	22	685,000	....	1,100,000	122,861	74,113	none	40
Rich., Fred. and Potomac	"	76	1,000,000	503,006	1,531,238	254,376	113,256	7	100
South Side	"	62	1,357,778	640,000	2,106,467	62,762	....	....	....
Virginia Central	"	107	1,673,684	469,150	2,392,215	210,052	99,077	10	50
Virginia and Tennessee	"	73	2,650,091	707,958	3,545,256	109,268	42,736	none	98
Winchester and Potomac	"	32	180,000	120,000	416,532	89,776	....	12	....
Wilmington and Raleigh	N .C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	....
Charlotte and South Carolina	S. C.	110	....	....	....	....	....	....	....
Greenville and Columbia	"	140	1,004,231	500,000	In prog.	....	....	....	....
South Carolina	"	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester	"	...	....	....	In prog.	....	....	....	....
Georgia Central	Ga.	191	3,500,000	418,187	3,465,879	986,074	535,608	8	116
Georgia	"	211	4,000,000	1,214	....	934,424	456,468	7½	....
Macon and Western	"	101	1,013,088	163,000	1,277,334	278,739	149,960	9	101
Muscogee	"	71	....	....	In prog.	59,590	21,731	....	....
South Western	"	50	586,887	150,000	743,525	129,395	71,535	8	....
Alabama and Tennessee River	Ala.	55	....	....	In prog.	....	....	....	....
Memphis and Charleston	"	93	776,259	400,000	In prog.	....	....	....	....
Mobile and Ohio	"	33	879,868	....	In prog.	....	....	....	....
Montgomery and West Point	"	88	688,611	....	1,330,960	173,542	76,079	8	....
Southern	Miss.	60	....	....	....	....	....	....	....
East Tennessee and Georgia	Tenn.	80	835,000	541,000	In prog.	....	....	....	....
Nashville and Chattanooga	"	125	2,093,814	850,000	In prog.	....	....	....	....
Covington and Lexington	Ky.	73	1,430,150	900,000	In prog.	....	....	....	63
Frankfort and Lexington	"	29	357,218	....	584,902	87,421	44,250	....	80
Louisville and Frankfort	"	65	....	....	....	....	....	....	....
Maysville and Lexington	"	...	....	....	In prog.	....	....	....	45
Cleveland and Pittsburgh	Ohio.	100	1,979,100	1,142,200	3,279,908	432,682	267,278	10	59
Cleveland and Toledo	"	147	2,000,000	1,600,000	....	....	....	..	71½
Cleveland, and Erie	"	95	....	....	....	....	....	....	....
Cleveland and Columbus	"	135	3,027,000	408,200	3,655,000	777,793	483,454	12	100
Columbus, Piqua and Indiana	"	46	....	....	2,000,000	....	....	....	....
Columbus and Lake Erie	"	61	....	....	....	....	....	....	....
Cincinnati., Ham. and Dayton	"	60	2,100,000	500,000	2,659,653	321,793	200,967	....	....
Cincinnati and Marietta	"	...	....	....	In prog.	....	....	....	62
Dayton and Western	"	40	310,000	550,000	925,000	Recently	opened.	....	75
Dayton and Michigan	"	20	....	....	In prog.	....	....	....	....
Eaton and Hamilton	"	36	....	....	....	....	....	....	56
Greenville and Miami	"	31	....	....	....	....	....	....	....
Hillsboro	"	37	....	....	In prog.	....	....	....	....
Little Miami	"	84	2,668,402	482,000	3,169,733	667,559	352,133	10	....
Mansfield and Sandusky	"	...	900,000	1,000,000	1,855,000	....	....	....	....
Mad River and Lake Erie	"	167	2,387,200	1,767,000	4,110,148	540,518	113,401	....	77½
Ohio Central	"	57	....	....	In prog.	....	....	....	79
Ohio and Mississippi	"	...	....	....	"	....	....	....	....
Ohio and Pennsylvania	"	187	1,750,700	2,450,000	....	Recently	opened.	....	....
Ohio and Indiana	"	...	....	....	In prog.	....	....	....	....
Scioto and Hocking Valley	"	44	750,000	300,000	"	Recently	opened.	....	....
Columbus and Xenia	"	54	1,291,700	26,000	1,310,062	314,434	168,612	10	....
Evansville and Illinois	Ind.	31	....	....	In prog.	237,506	....	....	....
Indiana Central	"	...	....	....	"	....	....	....	....
Indiana Northern	"	131	....	....	"	....	....	....	....
Indianapolis and Bellefontaine	"	83	....	....	"	Recently	opened.	....	90
Indianopolis and Cincinnati	"	90	1,128,486	1,289,000	1,869,932	Recently	opened.	....	....
Lafayette and Indianapolis	"	62	....	....	....	....	opened.	....	....
Madison, Indianapolis & Peru	"	159	2,647,700	1,241,300	2,400,000	516,414	268,075	10	....
Terre Haute and Indianapolis	"	72	632,387	663,100	1,353,019	105,944	71,446	4	....
Rock Island and Chicago	Ill.	...	....	....	....	....	....	....	....
Chicago and Mississippi	"	135	2,400,000	4,000,000	4,600,000	....	....	....	....
Illinois Central	"	...	....	....	....	....	....	....	....
Galena and Chicago	"	92	....	500,000	In prog.	473,548	286,152	....	....
Michigan Southern and Ind. N.	Mich.	315	....	3,741,564	7,276,616	1,200,922	586,929	17	90
Michigan Central	"	282	....	3,977,568	8,618,505	1,145,598	582,816	8	85
Pacific	Mo.	88	....	non	In progres	Recently	opened.	....	....

cent. in ten days. The advance in this stock has helped to carry up others. There is however a better feeling prevailing, and we think a gradual improvement may be looked for. We are certain such would be the fact, if the Erie Income bonds could be satisfactorily settled.

There is a steady, though not a large demand for railroad bonds.

The earnings for August as far as heard from are satisfactory. We give the following in addition to the returns in last week.

Pennsylvania R. R.

Receipts for August, 1854	$305,668 64
Corresponding month last year	236,493 19
Increase	$69,175 45
Receipts from January to Aug. 31, 1854	$2,431,017 21
Corresponding period last year	1,844,869 77
Increase	$586,147 44

Michigan Southern R. R.

Passengers and Mails	$96,237 47
Freight and Miscellaneous	69,712 36
Total	$165,949 83
Earnings August 1853	155,398 48
Increase	$10,551 35

Galena and Chicago R. R.

The receipts of the Chicago and Galena Road in

August were	$103,000
August, 1853	49,000
Increase	$54,000

New York Central R. R.

	Passengers.	Freight.	Total.
1854, July.	$301,087 76	$122,429 90	$423,467 66
1853, July.	267,562 91	103,128 49	370,691 40
Increase	$33,474 85	$19,301 41	$52,776 26
1854, Aug.	$317,000 00	$198,174 60	$515,174 60
1853, Aug.	349,125 76	151,285 18	500,410 94
Increase			$14,763 60

Ohio and Pennsylvania R. R.

The receipts of the Ohio and Pennsylvania Road in August, 1854, were $110,238 38

For August, 1853	66,928 28
Increase, 65 per cent.	$43,310 10
For the first eight months of 1854	631,473 33
For the first five months of 1853	364,848 86
Increase, 73 per cent.	$266,623 47

The earnings of the Chicago and Rock Island Railroad for August were $97,641.

Appointment.

E. C. Thompson, Esq., well known to the Eastern public as a conductor of the Boston & Maine Railroad for many years past, and an universal favorite, has been appointed Superintendent of the Manchester & Lawrence Railroad.—*State of Maine.*

Pittsburg and Connellsville Railroad

That portion of this road now under contract, is being pushed forward with a considerable degree of vigor. It is supposed that the balance of the road will not be placed under contract before next spring. In the meantime the different corps of Engineers are busily engaged in running experimental lines so as to determine the most practicable route.

Alton and Terre Haute R. R.

This road is rapidly progressing to completion. Nearly forty miles east of Alton are now in readiness for the trains.

Erie Railroad.--How Should the Income Bonds be Paid?

The writer of the following is a gentleman in influential position, at the head of a large banking house, and one of the extensive buyers of our railroad securities for foreign account. His opinion is the more valuable for the reason, that he has not recommended *Erie* to his customers, for fear of a crisis similar to the one that has happened. He has full confidence however in the *capacity* of the road for success, and stands ready to give it his encouragement and support, the moment a correct and consistent policy shall be agreed upon. *With* such a policy, the Erie Company would not be compelled to execute a "*chattel mortgage*" to raise the paltry sum of $500,000, nor submit to the humiliating necessity of having all their wants, and all the steps to relieve them, paraded before the public. *Without* a policy which shall secure the co-operation of the conservative portion of the community, particularly of such banking houses in this city as control the public sentiment in Europe in reference to our railroads, we see little hope for *permanent* improvement in the stock and securities of the Erie road. A very few men among us, a majority of whom, we presume, have no interest of any kind in the road, control the market value of this stock; or we should say, rather, could put its securities to their former *figure*, by the simple expression of favorable *opinion* as to its *management*. Shall not such an *easy* remedy for the difficulties under which the road is laboring be resorted to?

To the Editor of the R. R. JOURNAL.

I beg leave to address you a few lines on a subject that is just now attracting universal attention —the Erie Railroad and its debts.

The floating debt, the directors tell us, is provided for. They tell us further, that they hope *soon* to make proposals for liquidating the *Income* Bonds, due on the first of February, and they state that the road has earned, *net*, after paying all expenses, discounts, interests and commissions, full $616,000 in *nine* months. I believe the above statement to be true; at all events I have no doubt it is *possible*.

Now to the point—How are the Income Bonds due 1st February 1855, amounting, if I mistake not, to $2,700,000, to be met?

I propose, and propose it not only to the Erie Railroad Company and its directors, but to the community at large, and to the foreign holders of the Income Bonds that the Company honestly and candidly confess their inability to pay them *cash*, and submit the following compromise:

The Directors state that the road has earned *net*, after paying all expenses, interests, discounts, and commissions, $616,000 in nine months. If correct, the road, with its rapidly increasing business, will surely earn $620,000 yearly, net, for each of the 4 years to come. To pay the Income Bonds, issue an equal number of *new* Bonds due 1st February 1859, to be secured by *sinking* fund in hands of well known and trustworthy men, not connected with the Erie Railroad Company as *Directors*.

To the sinking fund is to be carried annually $620,000 in semi-annual payments; the first payment of $310,000 to be made 1st August 1855. All monies paid into sinking fund to be invested in the *new* Bonds so long as they can be had at, or below *par*. Otherwise put out on good security at 7 per cent. This sinking fund would work as follows:

Payment 1st August 1855	$310,000 00
Int. to 1st Feb'y 1856 at 7 per cent.= 3½ per cent.	10,850 00
	$320,850 00
Payment 1st Feb'y 1856	310,000 00
gives sinking fund 1st Feb'y 1856	$630,850 00
Same amount on 1st Feb'y 1857	630,850 00
and interest on $630,850, at 7 per ct.	43,160 50
Sinking fund 1st Feb'y 1857	$1,304,860 50
For 1857–58	630,850 00
and interest on $1,304,860, at 7 per cent.	78,340 23
Sinking fund 1st Feb'y 1858	$2,014,050 73
for 1858–59	630,850 00
and interest at 7 per cent. on $2,014,050	140,983 55
Sinking fund 1st February 1859	$2,785,884 28

or $85,800 more than wanted.

The remedy is clear and near enough; why not adopt it?

The Directors show us $616,000 cleared in nine months. Surely then it is in their power to pay off Income Bonds in 4 years as above.

I believe a 25 years' 7 per cent. loan is intended to be proposed with 1¾ yearly or ¾ per cent. semi-annual *sinking* fund. Any one who will take the trouble to calculate will find that a 7 per cent. loan can be extinguished in 25 years by a ¾ per cent. semi-annual sinking fund invested at 7 per cent. again.

Let us look at results of the two propositions. If the short loan 4 years, with the $310,000 *semi-annual* sinking fund be adopted, the Income Bonds are settled by the time the second mortgage is due, and the world, seeing the strength and productiveness of this great road, will be ready buyers for the 4 millions third mortgage bonds, set apart to liquidate an equal amount of the second mortgage due 1859,—the entire bonded debt will rapidly rise, as confidence is restored. But the shares, what will they be worth, if it be known that before the end of 1859, all chance of dividend is cut off. They are lower now than Hudson River Railroad shares that never paid a dividend, and is not likely to pay one sooner than Erie Company. But the shareholders are not, and cannot be injured. Brokers will, though, for it will for a time *kill* speculation in Erie; but there is field enough left to make brokerage on other stocks, so in fact no one will be injured; for if speculation be stopped on *Erie*, it will fall on something else.

If the 25 year loan is adopted what will be the result. The Directors are out of trouble, and may be able in 6 months from now to declare a dividend. Some knowing ones will make money on shares, but how about bonded debt? The 25 year loan will not sell at *par*, though secured by *sinking* fund, and in 1859 the 4 million third mortgage set apart to extinguish like amount of second mortgage again will, if saleable at all, sell below par. The Company to favor speculators in shares, only increase debt, and pay interest on money they never touched, they again sink on these seven millions to be sold between now and 1860 a capital of at least *one million* which in fact the stock loses, as the Company has ultimately to pay it.

The question it seems to me is simply this: Is it better to have the stock at 35 per cent. or 5 per cent. below value of Hudson River Railroad, that never paid a dividend, the result of giving up 4 years dividends to restore the Company to general confidence and credit, or is it better to make a long loan and carry stock up in view of early dividends, to see it and its bonds again depressed in 1859 as it now is? A 4 year loan and large sinking fund will fully restore the Company to public confidence. Speculation in shares may cease, but with every $310,000 paid into sinking fund, confidence in shares must revive. Slowly, but surely they will rise, to keep up; while a long loan may bring about rapid rise, and give a few a chance to realise fortunes, while in 1859 fortunes will again be lost, in the same manner they have been, on the shares, if the third mortgage does not sell freely to redeem second mortgage.

Suppose the 25 year loan is accepted, what will it sell at? will it sell over 80? will it sell at that price? In 1859 will the third mortgage sell better, while this 25 year loan with sinking fund exists? The Company will sink 1 million to 1¼ million in discount on loans. Please calculate the amount of this interest for 25 years to come. A capital invested at 7 per cent. doubles, calculating interest upon interest, in about 11 years! Stockholders by sinking 1 million in discount thus sacrifice in 11 years about 2 millions, in 22 years about 4 millions of dollars; and if 1¼ million is sunk in discounts on loans it will run up to a sacrifice of about *seven* millions in 25 years.

Better face it at once and lose 4 years' dividends to restore bonds and stock to confidence and value. It is the cheapest remedy after all.

Another thing I would suggest is that where the debt is equal to, or exceeds the capital stock of a company, the company should admit as directors a fair proportion of bond holders. Perhaps the Directors of Erie Railroad Company do not represent, in themselves, one million, par value, of shares, they may or they may not, and they may not hold one Bond, it seems to me unfair that the stockholders alone should manage a company where the stock is but ⅓ or ¼ of capital invested in road.

I am neither stockholder nor bondholder in Erie Railroad just now, nor have I ever been a stockholder. I have but a general interest in the road as the most prominent and productive one in the United States, if not in the world. I look upon it as a great and glorious undertaking, that even with the deficient management under which it has suffered, cannot be ruined. It will, it *must* succeed, sooner or later. I am duly desirous to point out the only true remedy, to bring it into permanent favor, and as soon as possible: the more, as in Europe to my knowledge, Erie is the standard by which our railroad securities are generally judged, and any deficient, incorrect, or injudicious course will lead to the general discredit of all our railroads. I feel confident that a short loan, with an adequate sinking fund will prove to the world at large, that our railroads are no humbug concerns, and though we may for a time misjudge and mismanage, we in the end are good for our debts.

Possibly with the arrangement for floating debt, it will not suit the Erie Company to create a 4 year loan, and give up to trustees $310,000 semi-annually. That of course must be considered, an

if necessary a 5 or 6 year loan be substituted for the 4 year one, I propose. What and all I ask is that the Company show to the world they *can* pay off a loan. Nothing harms us, and our credit abroad more, than paying off *old* debts by creating *new* ones. I appeal finally to all railroads, if they have their own, and the general credit at heart, to create sinking funds even for debts that are long since negotiated. It will raise our credit abroad and revive demand for our securities, and as natural consequence, improve prices.

Sept. 6th, 1854. M.

(For the American Railroad Journal.)

Erie Railroad.--Its Engineering History.

Mr. Editor—I have read with attention and satisfaction your article upon the "*Erie Railroad*" in the JOURNAL of September 2d. And, with your permission, will correct some statements which I think are calculated to do injustice to individuals heretofore connected with the road.

You say "the company suffered exceedingly for the want of a competent *Chief* of the engineering department, to give consistency and uniformity to the estimates and expenditures. No proper idea seems ever to have been formed of the cost or the magnitude of the work, but estimate after estimate of *final* cost appear to have been made from the extent of the demands *immediately* pressing upon the Company," You also say in another place: "Another great mistake was the neglect of the Company to employ a competent *chief engineer* during the progress of the work" &c.

You will recollect that the first Chief Engineer of the Erie Railroad was BENJ'N WRIGHT, under whose directions in 1834 and 1835, the first surveys were made by James Seymour and Charles Ellet, jr. No one will dispute the claim of Judge Wright to a place in the first rank of engineers. His report is not before me, but I recollect that he made the route for the road 483 miles long, that he reported that an *inclined plane* would be required at the westerly descent of Shawangunk Mountain, and another one at the western terminus of the road near Dunkirk, that the ruling grades on every working division of the road would be at least 70 feet per mile, and in some cases considerably more. that no curve would be of less radius than 500 feet, and that the *total* cost of the road would be five millions of dollars. I will submit for your consideration, as well as the consideration of others who are familiar with railroad matters, whether you would rather, today, own stock in a road built upon Judge Wright's plan at a cost of *five* millions, than the road as actually built at a cost of *thirty-five* millions?

During Judge Wright's administration he was assisted by such men as Edwin F. Johnson, Col. Talcott, Major Courtenay, Charles Ellet jr., James Seymour, H. C. Seymour and others; and consultod especially with Moncure Robinson and Jonathan Knight; and at the time of his leaving the road (Fall of 1836, I believe,) it was ascertained as the result of further and very extensive examinations along the whole length of the line, that the Shawangunk Mountain could be overcome by grades of 100 feet per mile and that the descent to Lake Erie could be accomplished by a grade of sixty-eight feet per mile.

During Judge Wright's administration 40 miles of the line was definitely located and about two-thirds graded between the mouth of the Callicoon Creek and the village of Deposit on the Delaware River.

The work was suspended in the spring of 1837. In the summer of 1838 Major T. S. Brown was appointed to locate the western ten miles, leading out of Dunkirk, and H. C. Seymour the eastern ten miles from Piermont. Mr. E. F. Johnson acting as consulting engineer. The grade at the western end of the road was reduced to 60 feet per mile. The eastern end was also located with the same maximum, and both extremities put under contract.

Edward Miller of Pennsylvania was appointed chief engineer in the summer of 1839 and filled the office till the assignment in 1841; Major Brown acting as associate engineer. During his administration the line from Binghamton to Dunkirk was located, and partly constructed, the location was made with reference to using piles wherever the ground would admit, and more than one hundred miles were actually driven upon the Susquehanna and Western Divisions; H. C. Seymour having charge as Division Engineer of the Eastern, A. C. Morton of the Delaware, Geo. E. Hoffman of the Central, Charles B. Stuart of the Susquehanna, and Major Brown of the Western Division.

The line from Hornellsville, twelve miles westward to Almond Summit, was located and partly graded upon a maximum grade of sixty-nine feet to the mile. No definite location of the line had been decided upon up to this time, (except the 40 miles on the Delaware River) between the Shawangunk summit and Binghampton. During the assignment, Major Brown was appointed Chief Engineer. On the resumption of work in 1845 by the Board of Directors of which Mr. Loder was chosen President, Major Brown was retained as Engineer and Horatio Allen was appointed Consulting Engineer, the question of location between Shawangunk summit and Binghampton was taken up, and after a long struggle in the Legislatures of New York and Pennsylvania the necessary laws were passed authorizing the Company to locate a portion of their road in Pennsylvania. The New York Legislature appointed a commission consisting of Messrs. John B. Jervis, Horatio Allen, and O. W. Childs, to examine this question with referenee to the comparative merits of the *interior* route through Sullivan county and the one now adopted. The commission decided in favor of the latter, principally on account of the great saving in rise and fall, and the reduction of maximum grades. After this decision the line was immediately placed under contract from Shawangunk summit to Port Jervis, and very soon afterwards, to Binghamton. The descending grade from Shawangunk summit to Port Jervis was reduced to 45 feet per mile. The grade along the Delaware between Port Jervis and Deposit (90 miles) does not exceed 15 feet per mile, ascending *westerly;* and is either *level*, or *descending* the whole distance *easterly*; the summit between Deposit and Susquehanna, (Lanesboro), was overcome by a maximum grade of 60 feet per mile.

Major Brown left the service o the company in the Fall of 1849; up to which time, the road had been completed to Elmira, and the location had been decided upon and the line partly graded rom Elmira to Hornellsville, the previous location made by Mr. Stuart between Binghamton and Hornellsville and upon which piles had been driven nearly the whole distance with maximum grades of 40 feet per mile was generally abandoned, and the line was adapted to a *graded* road, with maximum grades between Susquehanna and Hornellsville (150 miles) of 15 feet per mile ascending *westerly*, and 5 ascending *easterly*.

During the administration of Major Brown, he was assisted by the following Division Engineers: Silas Seymour, from Middletown to Shohola (or Barryville); W. H. Sidell, from Shohola to the mouth of the Callicoon; L. J. Stancliff from Callicoon to Deposit; Julius W. Adams from Deposit to Binghamton; and L. J. Stancliff from Binghamton to Hornellsville. Major Morel took charge of Mr. Stancliff's Division on the Delaware, after Mr. Stancliff was appointed to the Susquehanna Division.

Before Major Brown left the service of the Company (and during the summer of 1848), Silas Seymour was appointed to revise and locate the line between Corning and Lake Erie. The location as before remarked was decided upon as for west as Hornellsville, before his departure for Russia, and the surveys between Hornellsville and Dunkirk were in progress. The surveys were completed in the spring of 1850, and resulted in the recommendation to the board by Mr. Seymour, and Mr. Horatio Allen, Consulting Engineer, of a line which shortened the distance between five and six miles from Hornellsville to Dunkirk, and reduced the maximum grades ascending westerly from 69 to 50 feet per mile, and ascending easterly from 60 to 40 feet per mile. This line was finally adopted by the Board, although in doing so, they abandoned a very large amount of work which had been done upon the old location. The line was immediately put under contract, and the road completed to Dunkirk in the spring of 1851, under the direction of the following *Division* Engineers, viz: L. J. Stancliff, from Hornellsville to Almond Summit; McRae Swift, from Almond Summit to the Nine mile, (on the Allegany River), and Silas Seymour from nine mile to Dunkirk. Mr. Horatio Allen continued to act as the Consulting Engineer of the Company until the completion of the road.

From this hasty sketch of the principal features in the *Engineering* history of the road, you will see that there has been a gradual and constant improvemcnt in the three most important features or characteristics of the road: to wit, alignment, maximum grades, and plan of construction. I think you will also admit that the Company have availed themselves of the best engineering talent in the country during the different stages of the road's progress, running as it does, through a period of seventeen years. It is not claimed that these improvements have been attained without great increased cost; but it is claimed, and can, I think, be clearly demonstrated, that no important change or improvement has been recommended by the Engineers and adopted by the Company up to the time of the completion of the road, that has not resulted, or will not result, in great and permanent advantage to the stockholders, and also to the public.

OBSERVER.

Mobile Harbor.

The improvement of the navigation of her harbor appears to be the condition of the future greatness of Mobile. Otherwise, she has most valuable and indefeasable elements of prosperity. Her central position on the gulf, and on the threshold of a vast natural drainage, besides the most important relation she will soon sustain to a magnificent system of railroads, are all commercial advantages of a superior order. Her rate of growth is probably now greater than that of any other city on the Southern coast.

When the railroads centering at Mobile are considered, and when reasonable estimates are formed of the results likely to attend their completion, it must be admitted that she has commercial resources far in advance of some cities of first rank. With any knowledge of the directness of these roads, and of the great staples produced throughout the ten to twenty degrees of latitude through which they are to pass, Mobile appears with the promise of becoming a great commercial center. We feel certain that a commercial interest is to be soon developed there, sufficient for the proper improvement of her harbor at least, and beyond, the limits of the sea are the bounds to which her trade may extend.

The withdrawal of the steamers running from New York to Mobile, to be put on the New Orleans route, is therefore likely to create a false impression of the commercial wants and of the marine accessibility of Mobile. A large ocean steamer was built more than two years since, expressly for the Mobile trade, and has continued to run regularly from this port for that time. Within a few weeks a new steamer has been added and now, at a time when the usual fall trade is just commencing, both boats are transferred to New Orleans. It is not believed that the commerce of Mobile is declining, or that the difficulties encountered in approaching her piers are increasing. It is supposed that these boats, both of which were built with a full knowledge of the expenses to which they would be subjected for lighterage in Mobile Bay, have merely abandoned a *good* for a *better* business.

As the experience with these steambers may be possibly regarded as a test of the navigable capacity of Mobile Bay we propose to describe its general hydrography and to point out its available and ultimate improvements.

The Bay of Mobile is about 30 miles from North to South, and ranges in width from 3 to 20 miles. The general wihth of the Northern 20 miles of the bay is not far from nine miles. The rapid increase of width of the Southern portion forms a broad bay on the Eastern side, shut off from the gulf by a long branch of land, and called Bon Secours Bay. This portion of the main bay has nowhere 12 feet depth at mean low tide.

The lower end of the bay is nearly shut off from the gulf by the long branch of land referred to, and by "Dauphin Island." The latter, some 10½ miles long, and very narrow, is probably an extended *bar*, formed by the counter current between the discharge from the bay and the Gulf Stream. The entrance to the bay, and towards its Western side, is about three miles wide. The navigable portion is however less than one mile in width.—The Main channel, off Mobile point, has 48 feet of water, but the "outer bar," about 5 miles outside, has but 20¾ feet at mean low tide. Inside Mobile point (31 miles below the city) an anchorage ground, covered with 18 feet of water, extends north about 6 miles and for a general width of about 2 miles. This is called the "Lower fleet," and does not approach within 3 miles of the western shore of the bay. From the 18 feet anchorage, vessels of lighter draught may proceed in 12 feet or more water to within 8 miles of the city, and within 6½ miles of the 15 feet water at the mouth of Mobile river. The upper limit to the 12 feet water is the boundary of the "upper fleet," and this depth of water approaches within 1⅛ miles of the west shore, at a point 24 miles below the city; to within 2⅜ miles of the same and 10 miles below the city; and to within 2400 feet of the east shore at "Alabama city," 14 miles S. S. E. from Mobile. Above the "upper fleet" vessels of but 8 feet draught can go up to Mobile.

The navigable depth of the bay is of course influenced by tides, but these usually rise and fall but to a small amount. The time and height of low water are irregular, and are much influenced by the direction and force of the wind. The average rise and fall, from observations at Fort Morgan, is 1. 2 feet. The rise of the highest tide above mean low water is 2.2 feet, the fall of the lowest tide below 1.4 feet; greatest range of tide 3.6 feet. There is generally but one high and one low water in 24 hours, the rise and fall being greatest when the moon's declination is greatest.

The winds blowing from the S. E. and round by S. to S. W. tend to raise the water in Mobile Bay. Northerly winds tend to depress it. The prevailing winds are easterly, the relative duration of a wind from an easterly point to that from a westerly one, for an entire year, being as 2 to 1. The directions of the prevailing winds during the different months are as follows:

Dec., Jany. and Feby. Northerly with an occasional excess of S. E.

March and April, Northerly and S. E.

May, June and July, E., S. E., S. and S. W., with an excess of S. W. (the sea breeze.)

August, variable with an excess of S. W.

Sept., Oct. and Nov. N. and N. E.

Nearly the whole bottom of the bay is of soft blue mud.

The upper end of the bay is formed by the delta of the Mobile and Tensaw rivers, the diluvial deposits of which have formed a nearly continuous bar, covered by less than 5 feet of water, and extending across the bay. In the single channel through this bar the water is 12 feet, while at Dog River Bar, at the termination of the channel upon the level bottom, the depth at mean low tide is but 8½ feet. 3½ miles of the main channel have less than 11 feet depth. The deepest water on the bars at the mouth of the Mississippi, in the South West Pass, is 13 feet.

One improvement now going on is the contraction of the channel of Mobile river, whereby greater scouring power is anticipated. The closing of some of the unused passes at the north of the river may be alone sufficient for the abrasion of Dog River Bar for two or three feet.

The citizens of Mobile, now bound by pressing engagements upon their railroads have not yet undertaken any municipal action with reference to the improvement of their harbor. As the last hope of aid from the national government has fallen under the presidential veto of the River and Harbor bill, the people of Alabama may complete the improvement in their own capacity.

At Alabama port, 24 miles below Mobile and on the west shore of the bay, the 12 feet water approaches to within 1⅛ miles of the shore. The Mobile and Ohio road will probably extend to this point, where a pier of about the length of the Piermont pier of the Erie railroad would carry the trains to the vessels' sides. 10 miles below the city, at Deer River point, a pier of 2⅜ miles would be required to reach 12 feet water. These two points are the nearest to the two-fathom soundings of any on the west shore. On the East shore the Mobile and Girard road, or the Savannah and Mobile road, could reach 12 feet water by a pier of 2400 feet from Alabama City, 14 miles S. S. E, of Mobile.

If however the 6½ miles of the channel, between the "upper fleet" and the 15 feet water at the mouth of Mobile river, be deepened to 12 feet, a cost of tracks and piers below, equal to $1,000,000 could be saved, and with a vastly greater convenience to the mercantile interest of Mobile.

North Alabama and Grand Junction Railway.

We are indebted to Mr. J. C. Avery, Civil Engineer, for a copy of the Southern Standard, Columbus, Miss., containing an able communication addressed by him to that paper, in reference to a proposed railroad from Columbus to the Tennessee river, at Decatur, Alabama. The scheme is called the "North Alabama and Grand Junction Railroad," and, if executed, would form a principal and most important link in the grand trunk railway line extending through Virginia, from Maine to the Gulf of Mexico. The length of the projected road, as is estimated, is 131 miles, for which it is proposed to raise a sufficient amount to pay the expenses of a preliminary survey.

At Decatur, says Mr. Avery, it will connect directly with a chain of roads, either completed or in active progress, extending some 1,450 miles on nearly an air-line to Bangor, Me., passing through Huntsville, Knoxville, Lynchburg, Washington, Baltimore, Philadelphia, New York and Boston, and constituting, with the proposed extension south-westerly, the longest air line road in the world. While this line will furnish a direct outlet to the Gulf for the trade and travel of the entire country east of the Alleghanies, embracing all of New England and the greater portion of the middle States as far South as the Carolinas, there is still another line of roads skirting the Cumberland Mountains on the west, and opening a very direct route from Decatur to Cincinnati, passing through Huntsville, Ala., Winchester and McMinnville, Tenn., and Danville and Lexington, Ky. This line, in connection with the North Alabama and Grand Junction Railroad will form part of the shortest connection between Cincinnati, the most important commercial city and railway centre in the west, and the Gulf ports. A third route has been chartered, the greater portion of which is now in progress of construction, extending from Decatur through Pulaski, Columbia and Nashville, Tenn., to Louisville, Ky.

The communication proceeds to say:

These three trunk roads, by reason of their admirable location and connections, will control at least two thirds of the business between the Gulf and the Northern and Eastern States.

The North Alabama and Grand Junction Road was projected with a view to effecting the *shortest, cheapest* and *most direct* connection between the system of roads above referred to, all converging to the common point, Decatur, and those terminating on the Gulf.

Columbus, the southern terminus of the road, will have railway communication with Mobile in less than a year, and, by means of a road recently chartered between Jackson, Miss., and the point of junction of the Columbus Branch with the Mobile road, styled the "South-western-Air-Line Extension Railroad," a direct connection will be effected with both the New Orleans and Texas Roads.

By inspection of a map of the United States, it will be seen that the cities of Jackson and Columbus, Miss., and Decatur, Ala., are precisely in the same straight line, which line being produced would coincide very nearly with the chain of roads before referred to, leading from the latter city in the direction of New York, thus giving us an *air-line road* from Jackson, Miss., nearly to the extreme eastern boundary of Maine, a distance of more than 1,700 miles! In connection with the New Orleans and Jackson Road, it would constitute a grand National thoroughfare, extending diagonally across the whole breadth of the Union, and connecting the principal commercial depot of the South-west with all the Northern Atlantic cities.

It may be safely affirmed that no other line of roads, looking to the same general connections, can compete with the route here marked out, in all the elements essential to the cheap and rapid transport of freight and passengers between the two extremes. Through Virginia and Tennessee, the route is remarkably direct, and rendered entirely secure from competition by the mountainous character of the country on either side of the line. Going south-westerly from Decatur, nature seems to have made express provision for the extension of the road in a straight line to Jackson, Miss., a careful reconnoissance of the route demonstrating the existence of an unusually favorable line for the construction of a road, both as regards first cost and economical working.

At Jackson, as has been stated, we not only connect directly with the New Orleans road, but also meet a road now in process of construction, running due west through Vicksburg to Shreveport, La., and soon to be extended entirely across the State of Texas, and perhaps eventually to reach the Pacific.

This is a most important connection for our projected line, as it will throw upon it the great bulk of the travel and transportation between Louisiana and Texas, and the Northern and Eastern States.

By the proposed connections, the distance between New Orleans and N. York will be reduced to 1,430 miles, and the time of transit to 2½ days; from New Orleans to Cincinnati 877 miles, time 1½ days, and to Louisville 760 miles, time 1½ days.

By the construction of the short link between Columbus and Decatur, these results may be realized within a period of three years, as this will allow ample time for the completion of all the other connections referred to.

The connection of Decatur, Ala., with Jackson, Miss., is very important, for the reasons urged by Mr. Avery. But as a railroad for that purpose would properly be deflected to Pikeville, to avoid the broken ground in the south of Lawrence county, and for local purposes, it appears to us that it should thence continue to Aberdeen, Miss., and connect with the Great Northern road; rather than to construct a rival line (known as the "South Western Air line extension") from Columbus to Jackson.

Railroads in Iowa.

We condense from the correspondence of the *Democratic Press*, the following information relative to the progress of Iowa in railroads and in the development of her towns and cities.

There are three divisions of the Mississippi and Missouri road, viz: first, second and third.

The Davenport and Iowa is the first division, and will run ultimately to Council Bluffs. It is located to Fort Des Moines, running through the southern corner of Scott County, thence through the northern line of Muscatine, via Moscow, thence through Johnson to Iowa City, thence through Iowa County, eight miles north of the Southern line, and six south of Marengo; thence bearing north through Poweshick, thence west through Jasper, via Newton, thence south-west to Des Moines in Polk County. The heaviest grading on this road is through Jasper County. January 1st it will be in running order from Davenport to Iowa City. One survey has been made from Fort Des Moines to Kanesville and the Bluffs.

The Muscatine and Oskaloosa is the second. It is located to Oskaloosa, has three hundred men at work, and is under contract to Fredona. This road will probably run to the mouth of the Platte. It is not, at any rate, the intention, to run it to Council Bluffs. From Muscatine it runs south-west to Columbus City, in Louisa Co.; thence west through Louisa and Washington, via the town of Washington, thence through Keokuk, six miles north of the southern county line, thence to Oskaloosa, in Mahaska Co.

The Muscatine and Cedar Rapids branch is the third division of the M. & M. Road. It is under contract from Muscatine to Moscow, and will be completed by first of May next. The M. & M. Company is composed principally of stockholders in the Chicago & Rock Island Railroad.

The Burlington and Wisconsin, a connection of the Northern Cross and Military Tract Road to Aurora. It is controled by the Michigan Central Railroad. It is located and under contract to Ottumwa, running north of west through Des Moines and Henry counties, via the towns of Hartford and Mt. Pleasant, thence to Fairfield in Jefferson Co., thence to Ottumwa, in Wapello. It will probably run thence to the mouth of the Platte, nearly through the centre of the counties of Monroe, Lucas, Clarke, Union, Adams, Montgomery and Mills. It is built by the Michigan Central Company. We thus have three lines west from the Mississippi, all converging to nearly the same point. It is now, however, considered a well settled fact that fifteen miles of rich country on each side of a railroad track is sufficient for its support. If such is the case, Iowa can support many more railroads that have yet been located or talked of.

Another road is in contemplation from Dubuque west. What steps have been or will be taken with regard to it, I have not been able to learn.

Of Muscatine the correspondent of the *Press* says:

Muscatine county contains ten whole and three fractional townships, containing in all an area of four hundred and thirty-two square miles, and two hundred and seventy-six thousand four hundred and eighty acres of land. The county and present city of Muscatine was first settled by Col. George Davenport. Its distance above St. Louis is three hundred miles; eighty above the Lower Rapids, and thirty below the Upper Rapids; one hundred and thirty below Dubuque; thirty miles east of Iowa City, and fifteen south, making a direct north-west route to the latter place. The number of inhabitants, at the census of 1850, I think, was something over three thousand—an estimate in 1851 made it over four, and it is now about five thousand. Bloomington was the original name of the town, and I notice it still holds that now, on the tables of distances on many of the Mississippi steamers. The name was changed in 1845. In 1853 Muscatine was incorporated as a city.

The business of Muscatine is principally in lumber, about ten million feet being sold annually, besides large quantities of laths, shingles and wooden ware. Two steam saw mills saw four million feet per annum. The logs come principally from Minnesota above the Falls of St. Anthony, and are from two to four weeks in reaching Muscatine. Coal is abundant in the northern part of Muscatine county.

Iowa City is 33 miles north-west from Muscatine. It probably contains a population at the present time of near 3,000 inhabitants.

The population of Iowa was, in 1852, 230,000, and is now expected to be fully up to 350,000. A recent census of some of the principal counties and towns is as follows:

Present Population of Counties and Towns.

County.	Population.	Largest town in county.	Population.
Lee	21,780	Keokuk	4,789
Van Buren	17,750		
Dubuque	16,600	Dubuque	6,634
Des Moines	16,336	Burlington	7,306
Scott	12,570	Davenport	5,272
Jackson	12,093		
Jefferson	11,045	Fairfield	1,013
Wapello	10,000		
Muscatine	9,499	Muscatine	3,694
Johnson	8,446	Iowa City	2,570

Cleveland Locomotives.

Nearly all of our Exchanges have copied extraordinary accounts of the economical performance of these engines, without enlightening us upon the means by which such results have been attained. Here is one:

They are turning out some valuable locomotives at the Cuyahoga Works in Cleveland, One of them was run a distance of 104 miles, using only three-fourths of a cord of wood, by actual measurement. The train consisted of four cars, made twenty-one stops, and kept up the usual rate of speed. The engine weighs twenty-five tons, and has a six foot driver. The amount of fuel usually consumed in running that distance, is 3 cords.

Again, we are told that another engine ran over 400 miles with "one tender of wood." Now we trust our friend Mr. E. B. Sterling, the principal proprietor of these works, will let the public know by what means such economy is attained. Is it due to using *coke* or *coal* with wood, or to the superior quality of the wood, or to any new arrangement of the parts of the engine? The Railroad *Journal*, we should suggest would be the best medium for giving the desired information.

Iron Bridges.

We find in the Philadelphia *Register* the following fair hit upon the weak faith of many people in our country who doubt the safety of iron bridges. From its signature and tone we should say it was from Herman Haupt, Esq., the able engineer of the Pennsylvania Railroad Company, and whose bridges, constructed of iron, will doubtless long outlive the prejudice which has for a few years existed against this class of structures. In England, timber bridges are as rare, and perhaps as much distrusted, as iron bridges are at home.

IRON BRIDGES.

The *Ledger* of yesterday had an article from the National Intelligencer noticing the fall of an iron bridge at Washington, which closes with this remark:

"These frequent disasters must impair confidence in iron for such purposes."

We would suggest that as many persons have

been known to die in bed, it might be well to caution the public against the use of such articles.

If a chain strong enough to bear only 10 lbs. should break with the weight of 100 lbs., should the material on that account be condemned? Iron is, next to stone, the most reliable material that can be found for bridges, and the most worthy of confidence, but not one man in twenty who pretends to plan bridges knows how to calculate their strength. The failures that have taken place have all been the result of defective proportion, and should have been anticipated. H.

Indianapolis and Cincinnati Railroad.

The following is the recent report of the President to the stockholders of this road. The results of operating the road, although made up from the most unproductive months of the year, show a rate of annual profit of above six per cent. on the total cost of the work; while the advance on the value of the land owned by the company, would, if considered, increase this rate. The current full year, during all of which this road will have the advantage of continuous connections to Chicago, and during which its local business will become better developed, while its expenses are lessened, will furnish yet better results.

This road will always furnish the shortest route between the two cities of Indianapolis and Cincinnati, both of which, (having now an aggregate population of nearly 250,000) are growing at the most rapid rate which daily increasing railroad facilities can induce. Lawrenceburg has an advantage also in its position on the Ohio river, as freight can be carried from the river to Indianapolis, and to the upper portions of the state, cheaper *via* Lawrenceburg and the Indianapolis and Cincinnati railroad than by any other route.

The ultimate construction of a railroad from Greensburg, on this road, to Terre Haute, will also make this road a part of a great route between St. Louis and Cincinnati.

REPORT.

The undersigned submits to the Stockholders of the Company a full exhibit of its condition and affairs, embracing its operations since the first of December last, when the running of our cars had well commenced, to the first of July last. This exhibit is the result of a very careful and thorough examination and review of all the affairs of the Company since its organization, and the results compare accurately with the books of the Company; and give a reliable and full view of its concerns.

DR. INDIANAPOLIS & CINCINNATI R. R.

To amount of Stock in Road paid for...	$1,213,723 38	
To 1st Mortgage 7 per cent. Bonds.....	500,000 00	
To 2d Mortgage 7 per cent. Bonds.....	400,000 00	
To Income 7 per cent. Bonds.....	8,000 00	
To Real Estate 10 per cent. Bonds...	200,000 00	
To Income 10 per cent. Bonds.....	200,000 00	
To Bills Payable....	253,440 38	
To receipts for transportation, 7 months from December 1st, 1853, to July 1st, 1854.....	145,947 80	
To profits on Real Estate sold since December 1st.....	16,307 00	
		$2,937,418 51

CR.

By amount paid for construction of Road.....	$1,739,304 17	
By cost of Land reserved for use of Company.....	63,275 00	
By cost of Equipments for Road.....	342,325 21	
By interest on Stock to 1st January, 1854, in Stock....	106,194 09	
By amount paid for taxes and repairs on Real Estate....	8,295 78	
By amount paid for taxes on Capital Stock of Company.....	9,160 00	
By Bills Receivable.	151,599 80	
By cost of running road 7 months, from December 1st, 1853,.....	70,868 56	
By 2d Mortgage 7 per cent. Bonds unsold.....	50,000 00	
By 10 per cent. Income Bonds unsold.....	36,500 00	
By Interest paid on Bonds since December 1st.....	49,820 00	
By Real Estate on hand.....	304,066 00	
By 5,208 Cords Wood on hand, cost, $1,-25.....	6,510 00	
		$2,937,418 51

Cost of Road and Equipments.....	$2,081,629 38	
Cost of Land used for Company.....	63,275 00	
Cost of Road and Equipments, and Land in use.....		$2,144,904 00
Cost per mile.....	23,832 20	
Floating debt of Company, 1st July, 1854.....		$253,440 38
Means of payment.		
Bills Receivable (chiefly for Land sold)....	$151,399 80	
Real Estate on hand for sale.....	304,066 00	
2d Mortgage Bonds unsold.....	50,000 00	
10 per cent. Income Bonde unsold.....	36,500 00	
		$542,165 30
Deduct proceeds of Lands pledged for payment of Real Estate Bonds.....		$200,000 00
Leaving applicable to Floating Debt		$342,156 30

The required increase of equipment, and expenditures for ballasting Road, and building Depots, &c., have added beyond our expectations to the debt of the Company; an experience which seems to have been usual in our country, where our roads are pressed into use, as soon as the track is laid down, and along the route of which new villages and business stations are springing up constantly, requiring accommodations.

As will be seen above, the gross receipts for seven months, including the summer, the most unproductive months, and a month in the winter, in which (an unusual occurrance) the river was frozen, were $145,947.80, or nearly $21,000.00 per month. Had the uniform tariff of freight, recently established by all the Railroads centering at Indianapolis, been then in operation, the receipts on the same amount of business would have been about $24,000,00 a month, without increasing expenses; so that the receipts for the ensuing year, which will include the fall, the most productive months, ought to average much larger, while the expenses, from the greatly improved state of the road, the experience of officers and hands, and better depot accommodations, may be expected to be largely diminished.

The expenses for transportation during the seven months, has been 70,868.56, or about 48 per cent. of the gross receipts.

Although the net earnings of the road, after paying the interest on all except the Real Estate Bonds, which is a charge upon the lands, have been $41,809.24—about 3½ per cent. on the Capital Stock—still, as they have been used for the road, and payment of debts, it has been thought best to make no dividend until January next.

The result of the first few months operations, commenced in the winter, when the road was but partially ballasted, along a route to which the business of the country to be affected by it, had to be gradually conformed, affords very satisfactory evidence of the reliable character of the estimated productiveness of our road. The number of promising villages and business stations, and of saw and grist mills, and other manufacturing improvements already erected, proves that the expectations formed of the value of the local business of our line, are to be abundantly realized,

T. A. MORRIS, Pres.

Office Indianapolis & Cincinnati Railroad, Lawrenceburg, August 21, 1854.

Erie Canal Enlargement.

By the recent awards of the enlargement contracts it appears that important gains are made by the State; considering the relation of the present contracts to the engineer's estimates, and that by so far are the public works relieved from the responsibility of the expenditure charged upon them by their opponents. The Albany Journal compares the bids and estimates as follows:

Name of Canal.	*Aggregate of bid on which the work was awarded.*	*Engineers' estimate.*	*Amount less than estimate.*
Erie E. Division.	$314,603	$415,576	$100,973
Erie M. Division.	325,041	387,317	62,275
Erie W. Division.	284,446	364,786	80,340
Champlain.....	57,676	82,450	24,774
Black River.....	74,131	79,000	4,869
Oswego.....	222,387	254,986	32,599
Cayuga & Seneca.	140,763	175,443	34,679
Total.....	$1,419,050	$1,759,561	$340,511
Awards less than estimates.	340,511		
Being 19 35-100 per cent. below the estimates.			

Opening of the Quebec and Richmond Railroad.

We are gratified in being authorized to announce that the line of Railway from Richmond to Quebec, will be publicly opened for travel on Monday, the 2d day of October next, on and after which date, regular trains will be run daily, between Quebec and Portland, and between Quebec and Montreal. The entire distance between Portland and Quebec will be 320 miles, and between Quebec and Montreal 172 miles. Trains already pass over the line from Quebec to Richmond, but there still remain a few items of work to put the line in complete order.

The extreme drought of this summer has been favorable for railway construction, and the Grand Trunk Company have spared neither pains or expense to have the entire line to Montreal and Quebec, in the most perfect running order. The speed and regularity with which the line is now worked excites admiration, and we may fairly point to it as the most thoroughly planned, the best constructed and managed road on this continent.

The opening of this line to Quebec will be a most important event in the history of our railway system, and the commercial advantages that our city is to derive from its completion are already being shadowed forth in the events that are occurring in our midst.

Canadian names and faces are as familiar in our streets as those of our nearest neighbors, and the trade of the coming winter will give us notions, of which our fathers had but little knowledge. Lord Elgin's prediction seems very nearly realized—"that Portland is to become a Canadian sea-port."—*State of Maine.*

Workshops of the Northern Indiana Railroad Co.

On the fourteen acres set apart by the Northern Indiana Railroad Company for work shops in Toledo, will be erected now as speedily as the work can be done, the following buildings:

An engine house, in the form of a half circle which is to be 518 feet on the outside.

A machine, and smith shop, 64 by 190.

A car shop, 64 feet by 166.

A building for boiler, brass and copper shops, 80 feet by 100.

A paint shop, 40 feet by 115.

A wood house, 40 feet by 150.

A lumber house, 30 feet by 250.

These buildings will be constructed mostly of brick, and the whole cost with the necessary fixtures and machinery, will probably be not less than a hundred and twenty thousand dollars.—They are all to be located between Wade street and the railroad track—the whole of the middle ground being judged requisite to accommodate the business of the roads meeting there.—*Republican.*

Atlantic and Mississippi Railroad.

This company have appealed to some of the Illinois counties, on their line, for subscriptions to aid in the completion of their road. They propose to accept County Bonds, as follows:

Bonds issued in payment of stock, are to be made payable in fifteen years, and none to be issued until the road is one-half graded, and then only as installments become due.

The interest on these bonds to be paid by the company until the road is finished and earning money to meet it.

A large meeting of the citizens of Bond Co. have adopted the following resolution.

Resolved. That in the opinion of this meeting the county of Bond should take seventy five thousand dollars in the stock of the Mississippi and Atlantic Railroad Company, on the terms proposed by the Directors of said Company.

This resolution was then put and adopted by an overwhelming vote of more than ten to one.

The final vote on this subscription will be taken at the November election.

Central Ohio Railroad.

We learn from the Zanesville *Aurora* that the Stockholders of the Central Ohio Railroad, on Monday last elected the following gentlemen as Directors of said Company for the ensuing year:

John H. Sullivan, Chancy Brooks, N. L. Whittimore, N. Wright, John Davenport, J. W. Hall, George James, S. R. Hosmer, William Galligher, Samuuel Clark, George B. Wright, D. W. Deshler Samuel Brush.

There was no opposition to the ticket elected, with the exception of George James, Esq., of Zanesville. He was elected over Mr. Sarchet, of Cambridge, by a close vote, the vote of the distant stockholders generally having been cast against Mr. James.

Opelika and Girard Railroad of Alabama.

The Railroad from Opelika to Girard is progressing finely. The grading is nearly or quite completed the whole way, and the superstructure is laid down ready to receive iron rails, nearly or quite to Salem a distance of 10 miles from Opelika. The company say the road will be in running order by the first of January next. No arrangement has been made by which the road can cross the Chattahoochee river. The depot, consequently, will have to be made on the western bank.

Chemung R. R.

At an election for Directors of the Chemung railroad Company, held at Elmira, Monday, June 5, 1854, Simeon Benjamin, John Arnot, and A. C. Diven of Elmira, Chas. A. Cook, N. B. Kidder, William N. Clark of Geneva, Robert Bayard, Isaac Otis J. S. T. Stranahan, Frederic Pentz, J. W. Baker, D. S. Manners, J. J. Lagrave of New York, were duly elected Directors for the ensuing year; and at a meeting of the aforesaid Directors, held in New York on Tuesday, July the 11th inst., Simeon Benjamin was unanimously elected President, Robert Bayard Vice-President, and Isaac Otis Secretary and Treasurer.

Franklin and Warren Railroad.

At the annual meeting of the Stockholders of this road, held at Franklin, Ohio, on the 11th ultimo, the following Directors were chosen:

DIRECTORS.—Marvin Kent, Bela B. Clark, Thomas Earl, Zanes Kent, Daniel Upson, Jacob Allen, Daniel Beckel.

Marvin Kent, was elected President; J. W. Tyler, appointed Secretary; Zanes Kent, Treasurer.

The work is going forward steadily and rapidly, on the heavier sections of the line, says the Arkon *Beacon.*

Coal Railroad to Somerset County Pa.

The Wellersburg Railroad, extending from Barrellville to Wellersburg, and intended to connect the mines of the Union Company with the Mt. Savage Railroad, has been put under contract and the work is being pushed forward with a degree of energy that will ensure its early completion. Messrs. Walker, Abernethy, Dudley & Co., the contractors, have at this time 200 hands at work.

ZERAH COLBURN,

ENGINEER AND AGENT

FOR the Design, Construction, Valuation and Purchase of Locomotives and Railroad Machinery.

Offers his services to Railroad Companies in either of these departments, having long experience and the best facilities for all.

As CONSULTING ENGINEER he will advise as to the value or adaptation of any system of motive power, and furnish drawings, estimates and specifications for any arrangement of engine.

As ACTING ENGINEER he will superintend the construction, survey, or reconstruction of any railroad machinery, and guarantee satisfactory results.

As CONTRACTING ENGINEER, having connection with the most reliable and successful manufacturers, he will negotiate for the purchase of Locomotives of the very best construction and proportions. Also Wheels, Tires and Repair Shop Machinery.

Having much experience in Patent Business he will undertake the preparation of Drawings, Specifications, Applications for Patent or Caveat and other papers necessary for inventors. He is able to give material assistance in bringing inventions and improvements in Railroad Machinery into favorable notice.

CHILLED TIRES FOR LOCOMOTIVE DRIVING WHEELS.

Zerah Colburn retains the principal agency for the sale and right of use of this valuable improvement, and will furnish the most substantial guarantees of its Safety, Durability, Adhesion and great ECONOMY.

Office, 3d floor American Railroad Journal Building,
No. 9 Spruce street,
New York.

REFERENCES.

The New Jersey Locomotive and Machine Co.
James Jackson, Pres't, Paterson, N. J.
Chas. W. Elliott, Vice Pres't., 59 Beaver str., N. Y.
Henry V. Poor, Esq., Editor Railroad Journal, New York.
Geo. D. Phelps, Pres't. Del., Lack and Western Railroad.
Geo. W. Whistler, Vic Pres't New York & New Haven R.R.
William Raymond Lee, Esq., Boston.
Bush & Lobdell, Wilmington, Del.
Oliver M. Hyde, Esq., Mayor City of Detroit.

NUGENT'S COLLEGE

OF

ENGINEERS AND MECHANICS,

Public Square, Cleveland, Ohio.

E. NUGENT, C. E., *Principal.*

THE design of this Institution is to afford young men an opportunity of acquiring a knowledge of the profession of Civil Engineering, and to Mechanics and Tradesmen a sound theoretical and practical knowledge of Mathematics, Architectural and Mechanical Drafting, Plain and Ornamental Penmanship, &c.

For further particulars address the Principal.

New York and Erie R. R.

PASSENGER TRAINS
leave Pier foot of Duane street,
as follows, viz:—

BUFFALO EXPRESS, at 6 a. m. for Buffalo direct, over the N. Y. & E. R. R. and the B. & N. Y. C. R. R., without change of baggage or cars.

DUNKIRK EXPRESS, at 6 a. m. for Dunkirk.

MAIL, at 8¼ a. m. for Dunkirk and Buffalo, and intermediate stations. Passengers by this Train will remain over night at any Station between Binghamton and Corning, and proceed the next morning.

WAY EXPRESS, at 1 p. m. for Dunkirk.

ROCKLAND PASSENGER, at 4 p. m., (from foot of Chambers Street) via Piermont, for Suffern and intermediate stations.

WAY PASSENGER, at 4 p. m., for Otisville, and intermediate stations.

NIGHT EXPRESS, at 6 p. m. for Dunkirk and Buffalo.

EMIGRANT, at 6 p.m., for Dunkirk and Buffalo and intermediate Stations.

On Sundays only one Express Train—at 6 p.m.

These Express Trains connect at Elmira with the Elmira and Niagara Falls Railroad for Niagara Falls; at Buffalo with first-class splendid Steamers on Lake Erie for all ports on the Lake; and at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, etc.

D. C. McCALLUM, General Sup't.

OFFICE CINCINNATI, HAMILTON & DAYTON R. R. Co.
Cincinnati, August 8th, 1854.

THE Board of Directors of this Company have this day declared a Dividend of Five per cent. out of the net earnings of the Company for the Six months ending 31. July, payable in Scrip bearing Seven per cent. interest redeemable in three years. The Scrip will be delivered on and after Sept. 1st, to the Stockholders registered in Cincinnati on application at the office of the Company, and to those registered in New York at the office of the Ohio Life Insurance & Trust Company in that city. The Transfer Books will be closed for ten days from this date.

32 1m] FRANK S. BOND, *Secretary.*

For Sale.

A STATIONARY Engine, having cylinders 13 inches bore and 20 inches stroke complete in all respects and finished in the best manner. Has been in use about six months.

ROGERS, KETCHUM & GROSVENOR,
Paterson, New Jersey,
jul.14 29 tf.] or 74 Broadway, New York.

A. B. Warford,

Chief Engineer, Susquehanna Railroad, Harrisburg, Pa.

To Engineers and Surveyors.

A YOUNG man, 18 years old, wants a situation (to learn the business) as chain carrier, in a railroad survey. No objections to go to any part of the country, or world. Good reference can be given if required. Address A. S., Office of this Journal. [32 1m

RAILROAD STOCKS, BONDS & STATE SECURITIES. The subscriber offers for sale—

Ohio and Mississippi Railroad Company, 7 per cent. second mortgage, convertible Bonds. Interest payable semi-annually in New York.

Scioto and Hocking Valley Railroad Company, 7 per cent. first mortgage, convertible Bonds. Interest payable semi-annually in New York.

Cincinnati, Western Railroad Company, 8 per cent. Real Estate Bonds. Interest payable semi-annually in New York.

Hamilton County, Ohio, 6 per cent. Bonds. Interest payable semi-annually in New York.

Louisville and Portland R. R. Co. Bonds.

Maysville and Lexington R. R. Co., 6 per cent. second mortgage, convertible Bonds.

Louisville City Bonds.

Cincinnati, Logansport and Chicago R. R. Co., 10 per cent. Income Bonds.

RAILROAD STOCKS.

Covington and Lexington R. R. Stock.
Cincinnati, Hamilton and Dayton R. R. Stock.
Little Miami R. R. Stock.
Ohio and Mississippi R. R. Stock.
Southern Bank of Kentucky Stock.
Columbus and Xenia R. R. Stock.
Cincinnati and Chicago R. R. Stock.
Central Indiana R. R. Stock
Cincinnati and Indianapolis R. R. Stock.
Indianapolis and Bellefontaine R. R. Stock.
Cincinnati, Wilmington and Zanesville R. R. Stock.

WANTED—$100,000, for which the best securities will be given.

WANTED—$40,000, on commercial paper.

ISAAC OSBORN DAVIS,
Stock Exchange and Financial Agency Office,
No. 38 Third street,
32 1m] *Cincinnati, Ohio.*

ON THE APPLICATION OF IRON TO BUILDING PURPOSES.—JOHN WILEY, No. 167 Broadway, *has just published*—

FAIRBAIRN ON THE APPLICATION OF CAST AND WROUGHT IRON TO BUILDING PURPOSES. By William Fairbairn, C. E., F. R. S., F, G. S., etc. 1vol. 8vo., with numerous Diagrams and Illustrations, and tables for calculating the strength of materials &c. Price $2.

SELECTIONS FROM CONTENTS.—On Cast Iron Beams for supporting the Floors of Buildings—Cast Iron Beams with Flanches—Experiments made at Leeds by the Author—Rules for the Strength of Cast Iron Beams—Table of Result—On Compound or Trussed Cast Iron Beams or Girders—Rule for Calculating the Strength of do.—Comparison of Cost—Process of Toughening Cast Iron—Experiments—Cupola—Air Furnace—On Wrought Iron Beams for supporting the Floors of Buildings, and for other purposes—Experiments on the strength &c., of do—On Wrought Iron Trellis Girders—Formula for Calculating the Strength of Trellis Beams, &c,, &c.

"No engineer can do without this book."—*Scientific American.* [34. 2t.

NOTICE.

THE Copartnership heretofore existing between the undersigned, under the firm of Smith & Tyson, is this day dissolved by mutual consent. Either partner is authorized to settle the business of the concern.

J. HOPKINSON SMITH,
RICHARD W. TYSON,
No. 25 South Charles str.

Baltimore, July 1st, 1854.

Notice of Copartnership.

THE undersigned have this day formed a Copartnership under the firm of J. Hopkinson Smith, in which Richard W. Tyson is a special partner, and J. Hopkinson Smith is the general partner.

J. HOPKINSON SMITH,
RICHARD W. TYSON.

Baltimore, July 1st, 1854. [33 3m

Notice of Copartnership.

MR. PETER MARIE, herefore of the firm of DECOPPET & CO., has this day formed a copartnership with Mr. RUDOLPH KANZ, (for many years with the banking house of Messrs. L. Von Hoffman & Co.,) under the firm of MARIE & KANZ, at No. 27 William street.

Their attention will be devoted to the purchase and sale on Commission of Stocks, Bonds and Foreign Exchange, and to the negotiation of Business Paper.

New York, 1st September, 1854. 36 8t.

Rensselaer Polytechnic Institute.

DESIGNED for the education of ARCHITECTS and CIVIL ENGINEERS,—including Railway, Hydraulic, Topographical, and Mining Engineers.

For copies of the *Annual Register*, giving full information respecting the Institute, apply to

R. FRANKLIN GREENE, *Director, R. P. I.*
32 3m] *Troy, New York.*

Lowmoor Iron.

☞ W. BAILEY LANG & CO., 54 CLIFF STREET, have in stock and offer for sale an assortment of Round, Flat and Square Bars LOWMOOR IRON, which they will sell by the ton or single bar. The attention of manufacturers, Railway Managers and Mechanics is particularly directed to the quality of this Iron, as its great strength, uniformity, and freedom from flaws, render it the best Iron in the market, where first quality is required.

W. BAILEY LANG & CO., being Sole Agents in the United States and Canadas for the LOWMOOR CO., will execute orders at manufacturer's prices. 6t.31

RAILROAD SPIKES.

WROUGHT IRON

Chairs and Fastenings.

THE undersigned will continue to manufacture with increased facilities, HOOK & FLAT HEAD RAILROAD SPIKES, of all patterns, WROUGHT and CAST CHAIRS and FASTENINGS, BOILER RIVETS, BOLTS, SHIP and BOAT SPIKES, &c., &c.

The best quality of Refined Iron is used, and all orders filled with despatch.

J. HOPKINSON SMITH,
No. 25 South Charles st.

☞ Please direct the name in full.
Baltimore, July 1st, 1854. [33 tf.

Steam Engine and Blowing Cylinders for Blast Furnace for Sale.

A STEAM ENGINE, 20 inch cylinder, and five feet stroke, together with Blowing Cylinders, five feet diameter, and six feet stroke, in perfect working order, for sale. Apply to

EDW. BECH & KUNHARDT, 62 Beaver St.,
Or, A. TOWAR, Agent Pokeepsie Iron Works,
23tf Pokeepsie, N. Y.

For Sale.

BY the Baltimore and Ohio Railroad Company, 24 crate cars adapted to Railroad purpose, which will be sold at a reasonable price. For further information, apply to.

SAMUEL J. HAYES,
M. of M., Baltimore and Ohio R. R. Co.,
Or BRIDGES & BRO.,
19 tf 64 Courtland st., New York,

To Contractors for Railroad Iron.

PROPOSALS will be received until the 20th September for nine thousand tons of railroad iron T pattern, sixty pounds to the yard, One-half to be delivered at Charleston, South Carolina, and one-half at Wilmington, North Carolina, delivery to commence in January and close in August, equal quantities to be delivered in each month at each place.

Payment will be made immediately on the delivery of each cargo, in North Carolina Funds. The contract will be given to the lowest responsible bidder provided the price be satisfactory. Bidders will endorse their bids—"*Proposals* for Railroad Iron"—and address them to Cyrus P. Mendenhall, Secretary, North Carolina Railroad Company, Greensboro, N. C.

WALTER GWYNN,
Chief Eng. N. C. R. R. Co.
Raleigh, August 3d, 1854. [3t.t.d

Machinists' Tools.

SHRIVER & BROTHERS,

Cumberland, Maryland,

(on Baltimore & Ohio R. R., midway between Baltimore and the Ohio River)

MANUFACTURERS of *Engine Lathes, Planing Machines, Drill Presses, Hand Lathes,* and *other Machinists' Tools.*

These tools are built in a superior manner, from the very best materials, and are particularly adapted for railroad shops and all others requiring first rate machinery. Our location is very advantageous for shipping work to the West or South. Orders and communications receive prompt attention. Address

SHRIVER & BROTHERS, *Fulton Works,*
Cumberland, Maryland.

August 19th, 1854 [32. 6m